# JOURNAL OF
# PHYSICS
# AND
# CHEMISTRY OF SOLIDS

List of Contents, Author Index and Keyword Index
Volume 56, 1995

PERGAMON

# JOURNAL OF PHYSICS AND CHEMISTRY OF SOLIDS

(FOUNDER EDITOR: HARVEY BROOKS)



**Senior Advisory Editors**

DAVID E. COX, ARTHUR C. DAMASK, GEORGE J. DIENES, JACQUES FRIEDEL, JOHANN PEISL, SIR JOHN THOMAS, YASUSADA YAMADA and GUAN WEIYAN

**Editors**

ARUN BANSIL, *Physics Department, Northeastern University, Boston, MA* 02115, *U.S.A.*

YASUHIKO FUJII, *Institute for Solid State Physics, The University of Tokyo*, 7-22-1 *Roppongi, Minato-ku, Tokyo* 106, *Japan*

GEORGE A. SAWATZKY, *Laboratory of Applied and Solid State Physics, Materials Science Centre, University of Groningen, Nijenborgh* 4, 9747 *AG Groningen, The Netherlands*

ROBERT N. SHELTON, *Department of Physics, University of California, Davis, CA* 95616, *U.S.A.*

*Editorial Advisory Board*

F. BASSANI, Pisa, Italy
A. S. BOROVIK-ROMANOV, Moscow, Russia
R. C. BOWMAN, JR, Azusa, CA, U.S.A.
E. BURSTEIN, Philadelphia, PA, U.S.A.
C. R. A. CATLOW, London, U.K.
A. K. CHEETHAM, Santa Barbara, CA, U.S.A.
J. R. CHELIKOWSKY, Minneapolis, MN, U.S.A.
M. DATE, Ibaraki, Japan
F. J. DI SALVO, Ithaca, NY, U.S.A.
R. C. DYNES, La Jolla, CA, U.S.A.
J. FINK, Dresden, Germany
QINGQUAN GOU, Chengdu, Sichuan, China
C. HAAS, Groningen, The Netherlands
P. HAGENMULLER, Bordeaux, France
E. E. HALLER, Berkeley, CA, U.S.A.
F. J. HIMPSEL, Yorktown Heights, NY, U.S.A.
C. J. HUMPHREYS, Cambridge, U.K.
T. ISHIGURO, Kyoto, Japan
P. W. M. JACOBS, Ontario, Canada
J. A. KRUMHANSL, Ithaca, NY, U.S.A.
K. KAWASAKI, Fukuoka, Japan
S. C. MOSS, Houston, TX, U.S.A.
B. C. SALES, Oak Ridge, TN, U.S.A.
H. SUEMATSU, Tokyo, Japan
T. TIMUSK, Ontario, Canada

*Production Editor*

M. LAZENBY, *Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX*5 1*GB, U.K.*
*Tel*: (01865) 843880; *Fax*: (01865) 843923; *e-mail to*: m.lazenby@elsevier.co.uk



*Publishing, Subscription and Advertising Offices:* Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K.; and Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.

*Published monthly*. Annual Institutional Subscription Rates 1996: North, Central and South America, US$2147.00, Rest of World £1350.00. Associated Personal Subscription Rates are available on request for those whose institutions are library subscribers. Sterling prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice. Subscription enquiries from customers in North America should be sent to: Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A. and from the Rest of the World to: Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. Subscription rates for Japan are available on request.

Back issues of all previously published volumes, in both hard copy and on microform, are available direct from Elsevier Science offices (Oxford and New York). Complete volumes and single issues can be purchased for 1990–1995. Earlier issues are available in high quality photo-duplicated copies as complete volumes only. Back volumes on microfilm are available from UMI, 300 North Zeeb Road, Ann Arbor, MI 48106, U.S.A.



Copyright © 1995 Elsevier Science Ltd



SECOND CLASS POSTAGE PAID AT NEWARK, NEW JERSEY AND ADDITIONAL ENTRY POINTS. The *Journal of Physics and Chemistry of Solids* (ISSN 0022–3697) is published monthly, January to December in one volume by Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. The annual subscription in the U.S.A. is $2147. The *Journal of Physics and Chemistry of Solids* is distributed by Virgin Mailing and Distribution, 10 Camptown Road, Irvington, NJ 07111-1105. POSTMASTER: Please send address corrections to *Journal of Physics and Chemistry of Solids*, c/o Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A.



Whilst every effort is made by the publishers and editorial board to see that no inaccurate or misleading data, opinion or statement appear in this journal, they wish to make it clear that the data and opinions appearing in the articles and advertisements herein are the sole responsibility of the contributor or advertiser concerned. Accordingly, the publishers, the editorial board and editors and their respective employees, officers and agents accept no responsibility or liability whatsoever for the consequences of any such inaccurate or misleading data, opinion or statement.


Scanning Electron Micrographs on cover courtesy of John Simpson, II-VI MBE Group, Heriot–Watt University, Edinburgh, U.K.

# LIST OF CONTENTS

## Number 1


| | | |
|---|---|---|
| | iii | Publisher's Note |
| **E. Radzhabov** and **V. Otroshok** | 1 | Optical spectra of oxygen defects in BaFCl and BaFBr crystals |
| **Z. A. Matysina, O. S. Pogorelova, S. Yu. Zaginaichenko** and **D. V. Schur** | 9 | The surface energy of crystalline CuZn and FeAl alloys |
| **L. Pardo, M. L. Calzada, S. J. Milne, J. Ricote** and **B. Jimenez** | 15 | Microstructure development of diol-based sol–gel processed lead titanate thin films |
| **D. Zhang, G. Lan, S. Hu, H. Wang** and **J. Zheng** | 27 | Raman scattering study of benzophenone under high pressure |
| **A. Sengupta** and **D. Ghosh** | 35 | Hyperfine interactions of $^{161}$Dy in dysprosium pyrogermanate at low temperature |
| **B. P. Dwivedi** and **B. N. Khanna** | 39 | Cation dependence of Raman scattering in alkali borate glasses |
| **A. Veron, J. Emery** and **F. Lari-Guillet** | 51 | Naphthalene probe behaviour in normal phase I and incommensurate phase III of biphenyl |
| **Z. Wen-Chen** | 61 | Cation displacement in the case of charge misfitting substitution for $3d^5$ ions in corundum-type structure |
| **N. H. March** and **B. V. Paranjape** | 65 | Relation between thermoelectric power and Hall coefficient with application to the normal state of high $T_c$ superconductors |
| **D. G. Clerc** and **D. A. Cleary** | 69 | A study of the mechanism of cobaltocene intercalation in $Cd_2P_2S_6$ |
| **M. Sorescu, E. T. Knobbe** and **D. Barb** | 79 | Excimer laser processing of amorphous and nanocrystalline $Fe_{73.5}Cu_1Nb_3Si_{22.5-x}B_x$ ($x = 6$ and 9) |
| **S.-H. Choe, B.-N. Park, K.-S. Yu, S.-J. Oh, H.-L. Park** and **W.-T. Kim** | 89 | Optical properties of undoped and Co-doped $CdIn_2Se_4$ single crystals |
| **I. G. Batirev** and **J. A. Leiro** | 93 | Stability of the ferromagnetic state of Fe atoms at the surface of solids and small clusters |
| **B. Lenoir, A. Demouge, D. Perrin, H. Scherrer, S. Scherrer, M. Cassart** and **J. P. Michenaud** | 99 | Growth of $Bi_{1-x}Sb_x$ alloys by the traveling heater method |
| **Y. Yamamura, K. Saito, H. Saitoh, H. Matsuyama, K. Kikuchi** and **I. Ikemoto** | 107 | Heat capacity measurements and phase transition of crystalline 4,4″-difluoro-*p*-terphenyl |
| **O. Alvarez-Fregoso, O. Zelaya-Angel, J. G. Mendoza-Alvarez, F. Sánchez-Sinencio, M. H. Farías** and **L. Cota-Araiza** | 117 | Structural, optical and electrical properties characterization of CdSbTe thin films grown by radiofrequency sputtering |
| **O. Schoenfeld, X. Zhao, T. Hempel, Y. Aoyagi** and **T. Sugano** | 123 | Structure and electrical transport in microcrystalline composite Si–$NiSi_2$ thin films |
| **J. Soullard** | 129 | Vacancy clustering in manganese oxide |

**R. Pis Diez, E. J. Baran, A. E. Lavat** and **M. C. Grasselli** 135 Vibrational and electronic spectra of some mixed oxides belonging to the $Sr_2PbO_4$ structural type

**I. Shaltout, Y. Tang, R. Braunstein** and **A. M. Abu-Elazm** 141 Structural studies of tungstate–tellurite glasses by Raman spectroscopy and differential scanning calorimetry

**A. P. Batra** and **L. Slifkin** 151 Possible role of cation divacancy in anion diffusion in silver halides

I Keywords for the *Journal of Physics and Chemistry of Solids*

## Number 2

iii Publisher's Note

**X. Zhang, K. W. Yip** and **C. K. Ong** 153 A comparative study of the pressure-induced structural changes in $YBa_2Cu_4O_8$ and $YBa_2Cu_3O_{7-x}$

**A. Grzechnik** and **P. F. McMillan** 159 High temperature and high pressure Raman study of $LiVO_3$

**A. K. Ghorai** and **D. P. Bhattacharya** 165 Mobility characteristics of non-equilibrium carriers in III–V compounds at low lattice temperatures

**S. G. Ingle, J. G. Dupare** and **R. N. Kakde** 173 Use of $\gamma$-ray irradiation to control the domain structure in $KNbO_3$ single crystals

**S. Takai, H. Kawaji** and **T. Atake** 179 Low temperature heat capacity of $\alpha$-$K_2ZnBr_4$ and phase transition at 156 K

**O. Yamamuro, N. Onoda-Yamamuro, T. Matsuo, H. Suga, T. Kamiyama, T. Ishigaki** and **H. Asano** 183 X-Ray and neutron diffraction studies of methylammonium tetrafluoroborate: highly disordered orientations of $CH_3NH_3^+$ and $BF_4^-$ ions

**P. Chattopadhyay** 189 Effect of inversion on the grain boundary potential of a polycrystalline semiconductor

**M. Carle, T. Caillat, C. Lahalle-Gravier, S. Scherrer** and **H. Scherrer** 195 Crystal growth and thermodynamics of $n$-type $Bi_2(Te_{1-x}Se_x)_3$ single crystal solid solutions ($x \leqslant 0.05$)

**M. Carle, P. Pierrat, C. Lahalle-Gravier, S. Scherrer and H. Scherrer** 201 Transport properties of $n$-type $Bi_2(Te_{1-x}Se_x)_3$ single crystal solid solutions ($x \leqslant 0.05$)

**S. A. Kukushkin** and **A. V. Osipov** 211 Kinetics of non-isothermal nucleation of thin films

**A. Kumar** and **K. Shahi** 215 Composition and particle size effects on ionic conduction in $KCl$–$Al_2O_3$ composite solid electrolytes

**H. Hara** and **M. Sorai** 223 Heat capacity and phase transition of the thermochromic complex bis(1,5-diazacyclooctane)copper(II) nitrate

**J.-T. Yu, C.-H. Lee, K.-T. Liu C.-L. Hiu, Y. Huang, D. A. Payne** and **K.-H. Lii** 233 Electron paramagnetic resonance study of an Al-associated oxygen hole center in $KTiOPO_4$: Al crystals

**D. Nesheva, Z. Aneva** and **Z. Levi** 241 $B_{12}SiO_{20}$ monocrystals doped with transition metals

**E. A. Secco** and **A. Sharma** 251 Structure stabilization: locking-in fast cation conductivity phase in TlI

**C. A. Majid** and **M. A. Hussain** 255 Structural transformations in polycrystalline rhenium trioxide

**B. Bouma** and **G. Blasse** 261 Dependence of luminescence of titanates on their crystal structure

**C. De Mello Donegá, G. J. Dirksen, H. F. Folkerts, A. Meijerink** and **G. Blasse** 267 The vibronic spectroscopy and luminescence concentration quenching of the $Pr^{3+}$ ion in $La_2O_3$, LaOF and $LiYF_4$

**Z. T. Jiang, B. D. James, J. Liesegang, K. L. Tan, R. Gopalakrishnan** and **I. Novak** 277 Investigation of the ferroelectric phase transition in $(CH_3NH_3)HgCl_3$

**Q. Wang, Y. Gao** and **A. Bulou** 285 Crystal field and free-ion analysis for $Eu^{3+}$ ion in LaOF crystal

**J.-W. Lee, R. Ryoo, M. S. Jhon** and **K.-I. Cho** 293 Bond density and physicochemical properties of a hydrogenated silicon nitride film

**M. T. Pencarinha, C. P. Poole Jr, H. A. Farach** and **O. A. Lopez** 301 Measurement of flux creep in $Bi_2Sr_2CaCu_2O_8$ using electron spin resonance


**Number 3/4**

## *SPECIAL ISSUE*

## HPSP VI—*Proceedings of the 6th International Conference on High Pressure Semiconductor Physics*


iii Conference details

v Foreword

*Electronic Structures*

**T. Kobayashi, H. Kojima, R. S. Deol, N. Buchan, W. Heuberger, A. Jakubowicz** and **P. Roentgen** 311 The effect of pressure on the band-gap energy in ordered GaInP and AlGaInP grown by MOVPE

**V. V. Baidakov, V. N. Ermakov, A. E. Gorin, V. V. Kolomoets** and **V. A. Shenderovskii** 319 Non-trivial transport phenomena in extremely strained silicon and germanium crystals

**E. M. Baugher, M. Chandrasekhar, H. R. Chandrasekhar, H. Luo, J. K. Furdyna** and **L. R. Ram-Mohan** 323 A comparative study of ordered alloy and random alloy quantum wells of $Zn_{1-x}Cd_xSe/ZnSe$ under pressure

**S. J. Clark, G. J. Ackland** and **H. Akbarzadeh** 329 A theoretical study of pressure effects on selenium-I

**J. González, F. V. Pérez, E. Moya** and **J. C. Chervin** 335 Hydrostatic pressure dependence of the energy gaps of CdTe in the zinc-blende and rocksalt phases

**M. Kobayashi, T. Nakai, S. Mochizuki** and **N. Takayama** 341 Validity of the Sugano–Tanabe diagram for band states in MnO and MnS under high pressure

**Hideki Kojima, Hiroshi Kayama, Toshihiko Kobayashi, Kazuo Uchida** and **Jun'ichiro Nakahara** 345 Comparative study of photoluminescence in ordered and disordered GaInP alloys under high pressure

**A. D. Prins, J. L. Sly, A. T. Meney, D. J. Dunstan, E. P. O'Reilly, A. R. Adams** and **A. Valster** 349 High pressure determination of AlGaInP band structure

**H. Teisseyre, P. Perlin, T. Suski, I. Grzegory, J. Jun** and **S. Porowski** 353 Photoluminescence in doped GaN bulk crystal

**R. J. Thomas, H. R. Chandrasekhar, M. Chandrasekhar, E. D. Jones** and **R. P. Schneider, Jr** 357 Polarized photomodulated reflectivity and photoluminescence studies of ordered $InGaP_2$ under pressure

*Heterostructures: Optical*

**S. C. Shen, W. Shan, X. M. Fang** and **S. Jiang** 363 Photomodulated transmission spectroscopy of $In_xGa_{1-x}As$/GaAs MQWs under hydrostatic pressure

**A. R. Goñi, S. Ernst, K. Syassen** and **K. Eberl** 367 Electron–electron interactions in 2D electron gases: inelastic light scattering studies at high pressure

**Hyeonsik M. Cheong, J. H. Burnett, W. Paul, E. S. Koteles** and **B. Elman** 375 Observation of an optical switching effect in GaAs/AlGaAs quantum wells under hydrostatic pressure

**M. S. Daly, R. J. Warburton, J. G. Michels, R. J. Nicholas, J. J. Harris** and **C. T. Foxon** 381 Zeeman splitting in the extreme quantum limit through cyclotron resonance on two-dimensional GaAs at high pressure

**G. H. Li, A. R. Goñi, K. Syassen, O. Brandt** and **K. Ploog** 385 High pressure study of Γ–X mixing in InAs/GaAs quantum dots

**H. X. Han, Z. X. Liu, Z. P. Wang, J. Q. Zhang, Z. L. Peng** and **S. X. Yuan** 389 Pressure dependence of photoluminescence from ZnSe:Te–$(CdSe)_1(ZnSe)_3$ superlattice quantum wells

**S. Hitomi, K. Takarabe, S. Minomura, J. Sakai** and **T. Tatsumi** 393 Photoluminescence and Raman spectra of $Si/Si_{1-x}Ge_x$ strained superlattices under high pressure

**De-Sheng Jiang, Zhao-Ping Wang, C. Abraham, K. Syassen, Y. H. Zhang** and **K. Ploog** 397 A resonant Raman study on phonons in GaInAs/AlInAs multiple quantum wells

**O. Kuhn, D. K. Maude, J. C. Portal, M. Henini, L. Eaves, G. Hill** and **M. A. Pate** 403 Γ–X mixing studied by electroluminescence spectroscopy under hydrostatic pressure in a GaAs/AlAs p–i–n superlattice resonant tunnelling device

**J. Gregus, J. Nakahara, K. Takamura, J. Watanabe, K. Ando** and **H. Akinaga** 407 Photoluminescence in CdMnTe strained thin films

**P. Perlin, T. P. Sosin, W. Trzeciakowski** and **E. Litwin-Staszewska** 411 The effect of Γ–X mixing on the direct excitonic photoluminescence in GaAs/AlGaAs quantum wells

**P. Perlin, S. Shilo, T. Sosin, Y. Tyagur, T. Suski, W. Trzeciakowski, G. Karczewski, T. Wojtowicz, E. Janik, A. Zakrzewski, M. Kutrowski** and **J. Kossut** 415 The effect of pressure on the luminescence of CdTe/CdMnTe quantum wells

**T. P. Sosin, P. Perlin, W. Trzeciakowski** and **R. Tober** 419 Absorption and photoluminescence under pressure in InGaAs/GaAs strained quantum wells

**A. D. Prins, J. L. Sly, A. T. Meney, D. J. Dunstan, E. P. O'Reilly, A. R. Adams** and **A. Valster** 423 Direct measurement of band offsets in GaInP/AlGaInP using high pressure

**W. R. Tribe, P. C. Klipstein, R. Grey, J. S. Roberts** and **G. W. Smith** 429 Investigation of the conduction bandstructure in (001) oriented type II GaAs/AlAs short period superlattices using (100) uniaxial stress

*Heterostructures: Transport*

**P. C. Klipstein** 435 New resonant tunneling processes between longitudinal and transverse X-states in GaAs/AlAs double barrier structures beyond the type II transition

| | | |
|---|---|---|
| **S. Holmes, W. T. Yuen, T. Malik, S. J. Chung, A. G. Norman, R. A. Stradling, J. J. Harris, D. K. Maude** and **J. C. Portal** | 445 | Magnetotransport measurements on InAs–GaSb quantum wells with the application of hydrostatic pressure |
| **M. S. Daly, W. Lubczyński, R. J. Warburton, D. M. Symons, M. Lakrimi, K. S. H. Dalton, M. Van Der Burgt, R. J. Nicholas, N. J. Mason** and **P. J. Walker** | 453 | Pressure investigation of the quantum Hall effect in intrinsic semimetallic InAs/(Ga,In)Sb heterostructures |
| **S. Holmes, D. K. Maude, M. L. Williams, J. J. Harris, J. C. Portal, K. W. J. Barnham** and **C. T. Foxon** | 459 | Determination of the transport properties of composite fermions under high hydrostatic pressure |
| **U. M. Khan-Cheema, N. J. Mason, P. J. Walker, P. C. Klipstein** and **G. Hill** | 463 | High pressure studies of negative differential resistance in InAs/GaSb resonant conduction heterostructures |
| **D. Lancefield, A. R. Adams, A. T. Meney, W. Knap, E. Litwin-Staszewska, C. Skierbiszewski** and **J. L. Robert** | 469 | The light-hole mass in a strained InGaAs/GaAs single quantum well and its pressure dependence |
| **J. M. Smith, P. C. Klipstein, D. G. Austing, R. Grey** and **G. Hill** | 475 | The role of interface quality in resonant tunneling between transverse X-states in GaAs/AlAs double barrier structures pressurised beyond the type II transition |
| *Phase Transitions* | | |
| **T. Tinoco, A. Polian, J. P. Itié, E. Moya** and **J. Gonzalez** | 481 | Equation of state and phase transitions in $AgGaS_2$ and $AgGaSe_2$ |
| **M. I. McMahon** and **R. J. Nelmes** | 485 | Structural studies of tetrahedrally-coordinated semiconductors at high pressure—new systematics |
| **Toshihiro Arai, Toshiharu Makino, Masaaki Arai, Kiyoto Matsuishi** and **Seinosuke Onari** | 491 | Pressure-induced structural phase transition of CdS micro-crystals studied by Raman scattering |
| **J. Crain, G. J. Ackland, R. O. Piltz, P. D. Hatton** and **S. J. Clark** | 495 | Dense tetrahedral structures of compound semiconductors |
| **M. Bernasconi, G. L. Chiarotti, P. Focher, S. Scandolo, E. Tosatti** and **M. Parrinello** | 501 | First-principle-constant pressure molecular dynamics |
| **J. González, E. Calderón, T. Tinoco, J. P. Itié, A. Polian** and **E. Moya** | 507 | $CuGa(S_xSe_{1-x})_2$ alloys at high pressure: optical absorption and X-ray diffraction studies |
| **Raymond G. Greene, Huan Luo, Kouros Ghandehari** and **Arthur L. Ruoff** | 517 | High pressure structural study of AlSb to 50 GPa |
| **Raymond G. Greene, Huan Luo** and **Arthur L. Ruoff** | 521 | High pressure X-ray and Raman study of ZnSe |
| **P. Grima, A. Polian, M. Gauthier, J. P. Itié, M. Mezouar, G. Weill, J. M. Besson, D. Haüserman** and **H. Hanfland** | 525 | Phase relationships in mercury telluride under high temperature and pressure |
| **T. Hatano, R. Akimoto, M. Kobayashi, T. Suzuki** and **S. Endo** | 531 | Raman study of pressure-induced magnetic phase transition in EuSe |
| **R. Komori** and **Y. Miyamoto** | 535 | Pressure induced rotational ordering phase transition in solid $C_{60}$ |

**R. J. Nelmes, M. I. McMahon, N. G. Wright, D. R. Allan, H. Liu** and **J. S. Loveday** 539 Structural studies of III–V and group IV semiconductors at high pressure

**R. J. Nelmes, M. I. McMahon, N. G. Wright** and **D. R. Allan** 545 Structural studies of II–VI semiconductors at high pressure

**Atsushi Nishikawa, Komajiro Niizeki, Koichi Shindo** and **Kaoru Ohno** 551 Band structure and structural stability of the high-pressure phases of the group VIb elements

**A. San Miguel, A. Polian** and **J. P. Itié** 555 A variable coordination structure in II–VI semiconductors: the cinnabar phase

**K. Tsuji, Y. Katayama, Y. Yamamoto, H. Kanda** and **H. Nosaka** 559 Amorphization from the quenched high-pressure phase in tetrahedrally-bonded materials

*Vibrational Properties*

**J. Bak, U. Venkateswaran, C. L. Mak, R. Sooryakumar** and **B. T. Jonker** 563 Pressure dependence of the Fano asymmetry of optical phonons in $Zn_{1-x}Co_xSe$ and $Zn_{1-x}Fe_xSe$

**S. Ernst, A. R. Goñi, K. Syassen** and **M. Cardona** 567 LO-phonon–plasmon modes in *n*-GaAs and *n*-InP under pressure

**J. González, E. Moya** and **J. C. Chervin** 571 Pressure and temperature dependences of the Raman-active phonons in $CuGaS_2$

**Kohsuke Nishikawa** and **Yasuhiko Miyamoto** 577 Raman spectroscopic study on the phase transition in solid $C_{60}$ under high pressure

**Akihito Yoshioka** and **Kiyofumi Nagata** 581 Raman spectrum of sulfur under high pressure

*Defects*

**C. H. Park** and **D. J. Chadi** 585 Pressure dependence of deep centers in II–VI semiconductors: theory

**M. Baj** and **L. H. Dmowski** 589 Direct evidence of the two-electron character of DX centers based on co-doping with shallow donors and application of high pressure

**I.-H. Choi** and **P. Y. Yu** 595 Deep levels in $AgGaSe_2$

**E. Litwin-Staszewska, R. Piotrzkowski, S. Contreras, F. Kobbi, V. Mosser** and **J. L. Robert** 599 Emission energies of Si-DX centers in various AlGaAs microstructures

**A. Niilisk, A. Laisaar, I. S. Gorban'** and **A. V. Slobodyanyuk** 603 Pressure effects on zero-phonon lines in the impurity photoluminescence spectra of 6*H* SiC crystals

**T. M. Ritter, B. A. Weinstein, H. M. Kim, C. R. Wie, K. Stair, C. Choi-feng** and **M. Funato** 607 Relation between phase stability and mechanical defects in InGa(Al)As/GaAs and ZnSe/GaAs heterostructures under pressure

**J. L. Robert, P. Sellitto, A. Gougam, J. Sicart** and **R. Planel** 615 Determination of the energetical separation of DX states in GaAs and in AlAs by using planar-doped superlattices

**Marcin L. Sadowski** and **Marian Grynberg** 619 Effects of the population of localized levels on shallow donor transitions in semiinsulating GaAs

**G. A. Samara, M. Skowronski** and **W. C. Mitchel** 625 Pressure as a probe of deep levels and defects in semiconductors: antisites and oxygen centers in GaAs

**K. Takarabe, N. Shirase, S. Minomura, H. Kato, Y. Watanabe** and **K. Matsuda** 631 Multiplicity and lattice relaxation of the DX center studied by electron emission spectra under pressure

**J. Zeman, M. Zigone** and **G. Martinez** 635 DX centers in *n*-type GaAs under hydrostatic pressure

*New Techniques and Other Topics*

**I. Grzegory, J. Jun, M. Boćkowski, St. Krukowski, M. Wróblewski, B. Łucznik** and **S. Porowski** 639 III–V nitrides—thermodynamics and crystal growth at high $N_2$ pressure

**Witold Trzeciakowski** and **Tomasz P. Sosin** 649 New method for studying deformation effects on the optical spectra of quantum wells

**J. Zeman, M. Zigone, G. L. J. A. Rikken** and **G. Martinez** 655 Hydrostatic pressure effects on the porous silicon luminescence

**C. H. McMahon, J. W. Bae, C. S. Menoni, D. Patel, S. Feld, C. Wilmsen, H. Temkin, P. Brusenbach** and **R. Leibenguth** 663 Pressure and temperature induced detuning of gain and reflectivity spectra in vertical cavity surface emitting lasers

**D. Patel, C. S. Menoni, D. W. Schult, T. McMahon** and **S. M. Goodnick** 669 Effect of pressure on the output characteristics of p-GaAs/AlGaAs heterojunction field effect transistor

## Number 5

iii Publisher's Note

**C. De Mello Donegá, A. Meijerink** and **G. Blasse** 673 Non-radiative relaxation processes of the $Pr^{3+}$ ion in solids

**A. Gröne** and **S. Kapphan** 687 Sharp, temperature dependent OH/OD IR-absorption bands in nearly stoichiometric (VTE) $LiNbO_3$

**Katsumi Tanaka, Hideaki Suzuki, Katsuyasu Kawano** and **Ryohei Nakata** 703 ESR studies of $Mn^{2+}$–$Ba^{2+}$ centres in $Ca_{1-x}Ba_xF_2$:Mn

**Fu-Hsing Lu, Martin L. Newhouse** and **Rüdiger Dieckmann** 715 Oxygen activity dependent dissolution of nickel from nickel oxide into platinum

**Fu-Hsing Lu** and **Rüdiger Dieckmann** 725 Point defects in oxide spinel solid solutions of the type $(Co,Fe,Mn)_{3-\delta}O_4$ at 1200°C

**C. E. Mungan, U. Happek, T. Z. Hossain** and **A. J. Sievers** 735 Infrared spectroscopy of the stretching modes of $SeH^-$ and $TeH^-$ in KCl and KBr

**G. K. Wertheim** and **D. N. E. Buchanan** 745 Comparison of photoemission and resistivity in alkaline–earth compounds of $C_{60}$

**Keiji Kusaba, Yasuhiko Syono, Takumi Kikegawa** and **Osamu Shimomura** 751 A topological transition of B1–KOH–TlI–B2 type AgCl under high pressure

**Y. Mao** and **A. Krier** 759 InAsSb p–n junction light emitting diodes grown by liquid phase epitaxy

**Yu. V. Golikov, S. A. Petrova, A. V. Antonov** and **V. F. Balakirev** 767 Phase diagrams of the Mn–Al–O system

I Keywords for the *Journal of Physics and Chemistry of Solids*

## Number 6


iii Publisher's Note

**Takuya Hashimoto, Ryo Hirasawa, Toshikazu Yoshida, Yuki Yonemura, Hideki Tanaka, Junichiro Mizusaki** and **Hiroaki Tagawa** — 777 Analysis of role of oxygen deficiency in crystal structure and conduction mechanism of $BaBi_{0.25}Pb_{0.75}O_{3-\delta}$

**Ho-Jun Song, Sang-Hyun Yun** and **Wha-Tek Kim** — 787 Photoluminescence properties of $TlGaS_2$ and $TlGaS_2:Er^{3+}$ single crystals

**J. E. Hasbun** — 791 Electric field transport in a two-dimensional AlGaAs/GaAs heterostructure

**D. C. Sayle, C. R. A. Catlow, M.-A. Perrin** and **P. Nortier** — 799 Computer simulation study of the defect chemistry of rutile $TiO_2$

**M. E. Danebrock, W. Jeitschko, A. M. Witte** and **R. Pöttgen** — 807 Magnetic properties of the carbides RCoC (R = Y, Gd–Er, Lu) with YCoC-type structure

**P. Moens, F. Callens** and **E. Boesman** — 813 Electron paramagnetic resonance and molecular orbital study of $CO_3^-$ ions entrapped in KCl single crystals

**M. Januszczyk, Z. Kruczyński, J. Janicki** and **J. Pietrzak** — 819 EPR and Mössbauer studies of the $Fe(py)_3Cl_3 \cdot py$ single crystal

**R. R. Reddy, Y. Nazeer Ahammed** and **M. Ravi Kumar** — 825 Variation of magnetic susceptibility with electronic polarizability in compound semiconductors and alkali halides

**S. A. Kukushkin** and **A. V. Osipov** — 831 Kinetics of thin film nucleation from multi-component vapor

**B. M. Voronin** — 839 Some simple thermodynamic approaches to superionic disorder in fluorite-type crystals: application to $SrCl_2$ and $K_2S$

**Kazuya Saito, Yasuhisa Yamamura, Koichi Kikuchi** and **Isao Ikemoto** — 849 Glass transition due to freezing of intramolecular motion: crystalline *trans*-azobenzene and *trans*-stilbene

**Minquan Wang, Xianping Fan** and **Guohong Xiong** — 859 Luminescence of $Bi^{3+}$ ions and energy transfer from $Bi^{3+}$ ions to $Eu^{3+}$ ions in silica glasses prepared by the sol–gel process

**T. J. Gryk** and **R. H. Bartram** — 863 Embedded molecular cluster modeling of $Tl^0(1)$, $In^0(1)$ and $Ga^0(1)$ centers in potassium chloride

**W. Kucharczyk** — 871 Relationship between bond charge and the Szigeti effective charge in alkali halides

**G. Concas, F. Congiu, C. Muntoni** and **G. Pinna** — 877 Mössbauer spectroscopic investigation of iron in sodium phosphate glasses

**Jacek Zaleski** and **Adam Pietraszko** — 883 Crystal structure and investigation of phase transitions in di(tetraethylammonium)pentachloroantimonate (III) $[N(C_2H_5)_4]_2SbCl_5$

I Keywords for the *Journal of Physics and Chemistry of Solids*


## Number 7


**I. P. Semitelou, J. K. Yakinthos** and **E. Roudaut** — 891 The magnetic structure of $Er_5Si_3$

**Kai Wang** and **Robert R. Reeber** — 895 High temperature thermal expansion of alkali halides

**J. Andrés, A. Beltrán** and **J. A. Igualada** — 901 An *ab initio* perturbed ion study of pyrope garnet structure

**W. Köstler, A. Winnacker, W. Rossner** and **B. C. Grabmaier** — 907 Effect of Pr-codoping on the X-ray induced afterglow of $(Y,Gd)_2O_3:Eu$

**Taieb Ouazzani, Albert Lichanot** and **Cesare Pisani** 915 Effect of the quality of the atomic orbitals basis set on the relaxation and electronic structure of the (110) surface of lithium oxide

**I. P. Bykov, M. D. Glinchuk, V. V. Laguta, Y. L. Maximenko, L. Jastrabík, V. A. Trepakov, V. Dimza** and **M. Hrabovský** 919 Investigation of chromium impurities charge state and chemical bonds in PLZT ceramic

**A. V. Arakcheeva, G.-J. Babonas, L. I. Leonyuk** and **G. U. Lubman** 925 Ordering of Ca and Sr atoms in $(Ca_{0.5}Sr_{0.5})(Cu_{0.75}Bi_{0.25})O_2$ single crystals of $CaCuO_2$-type structure

**Jadwiga Tritt-Goc** 935 Proton dipolar coupling tensors in barium nitroprusside trihydrate

**Hiroyuki Kamata, Yuki Yonemura, Junichiro Mizusaki, Hiroaki Tagawa, Kazunori Naraya** and **Tadashi Sasamoto** 943 High temperature electrical properties of the perovskite-type oxide $La_{1-x}Sr_xMnO_{3-d}$

**T. Hirata** 951 Raman-active modes and the tetragonal–monoclinic phase transition in $ZrO_2$ doped with 12 mol% $CeO_2$

**S. Lizzo, A. Meijerink, G. J. Dirksen** and **G. Blasse** 959 On the luminescence of divalent ytterbium in $KMgF_3$ and $NaMgF_3$

**J. Haines, J. M. Léger** and **S. Hoyau** 965 Second-order rutile-type to $CaCl_2$-type phase transition in $\beta$-$MnO_2$ at high pressure

**Yujun Mo, P. Wachter, U. Martin** and **F. K. Reinhart** 975 Raman scattering of molecules adsorbed on a rough Al surface

**Guanghan Cao, Yitai Qian, Zuyao Chen** and **Yuheng Zhang** 981 Pr–O chemical bonding effect and Pr valence state in $PrBa_2Cu_3O_7$: a comprehensive structural-correlation study

**B. Deroide, B. Bertheville** and **J. V. Zanchetta** 989 Transport properties of polycrystalline samples of calcium and magnesium oxides. Experimental and theoretical approaches

**M. C. Marco De Lucas, F. Rodríguez, C. Prieto, M. Verdaguer** and **H. U. Güdel** 995 Local structure determination of $Mn^{2+}$ in the $ABCl_3:Mn^{2+}$ chloroperovskites by EXAFS and optical spectroscopy

**F. Pellé, N. Gardant, M. Genotelle, Ph. Goldner** and **P. Porcher** 1003 Optical properties of $Eu^{2+}$ and laser site selective spectroscopy of $Eu^{3+}$ in $CsCdBr_3$

## Number 8

iii Publisher's Note

**J. Schmelzer, J. Möller** and **V. V. Slezov** 1013 Ostwald ripening in porous materials: the case of arbitrary pore size distributions

**Byoung-Koo Choi** 1023 High temperature phase transitions and thermal decomposition of $KH_2PO_4$ crystals

**M. Radecka** and **M. Rekas** 1031 The studies of high-temperature interaction of Nb–$TiO_2$ thin films with oxygen

**Ivo S. Nachev** 1039 A Monte-Carlo model of ionic transport across a solid interface

**Richard A. Secco** and **Etalo A. Secco** 1045 Effect of pressure on the fast ion conductor $AgTlSO_4$

**O. L. Malta** 1053 The theory of vibronic transitions in rare earth compounds

**F. Adam, B. Dupre, K. Kowalski, C. Gleitzer** and **J. Nowotny** 1063 Diffusion of Cr in CoO

**H. T. Chu, Ni Fang** and **Zheng Qi** 1069 Double quantum size effects on the energy spectra of charge carriers in thin wires of pure bismuth

| | | |
|---|---|---|
| **R. Nava** and **R. Oentrich** | 1077 | Influence of the strongly dispersive transverse acoustic phonon mode on the elastic constants $C_{11}$ and $C'_{66}$ of $\alpha$-quartz below 300 K |
| **M. S. Augsburger** and **J. C. Pedregosa** | 1081 | Vibrational investigation of isolated molybdate and tungstate ions with large cations in condensed lattices |
| **V. I. Moravetski, V. A. Andryushchenko** and **L. M. Sheludchenko** | 1085 | Electronic structure of the carbide phase $Fe_{4-y}Al_yC_x$ |
| **L. A. Kulikov, Y. D. Perfil'ev** and **N. S. Kopelev** | 1089 | The iron charge state in solid cesium ferrate (VI) deduced from Mössbauer absorption and emission spectroscopy |
| **G. Chen, R. G. Haire** and **J. R. Peterson** | 1095 | Effect of pressure on amorphous $Eu(OH)_3$: a luminescence study |
| **Shusheng Jiang** and **J. Bruce Wagner, Jr** | 1101 | A theoretical model for composite electrolytes—I. Space charge layer as a cause for charge-carrier enhancement |
| **Shusheng Jiang** and **J. Bruce Wagner, Jr** | 1113 | A theoretical model for composite electrolytes—II. Percolation model for ionic conductivity enhancement |
| **D. Christofilos, G. A. Kourouklis** and **S. Ves** | 1125 | A high pressure Raman study of calcium molybdate |
| **Kazunaka Endo, Yasuo Kaneda, Masayuki Aida** and **Delano P. Chong** | 1131 | Analysis of valence XPS of $(CH_2–CHR)_n$ (R = H, $CH_3$, OH and F), $(CH_2–CH_2–NH)_n$ and $(CH_2–CH_2–O)_n$ polymers by the semiempirical HAM/3 MO method using the $n$-mer ($n$ = 2, 3, 4, 5) model |
| | I | Keywords for the *Journal of Physics and Chemistry of Solids* |


**Number 9**


| | | |
|---|---|---|
| | iii | Publisher's Note |
| **José A. Valdivia** and **Gaston E. Barberis** | 1141 | Fully relativistic electronic structure of the semiconductors PbTe, PbSe and PbS |
| **P. Boutinaud, D. Garcia, C. Parent, M. Faucher** and **G. Le Flem** | 1147 | Energy levels of $Cu^+$ in the oxide insulators $CuLaO_2$ and $CuZr_2(PO_4)_3$ |
| **A. Demouge, B. Lenoir, Yu. I. Ravich, H. Scherrer** and **S. Scherrer** | 1155 | Estimation of carrier mobilities and densities in $Bi_{0.96}Sb_{0.04}$ alloys from galvanomagnetic coefficients |
| **L. Chernyak, K. Gartsman, D. Cahen** and **O. M. Stafsudd** | 1165 | Electronic effects of ion mobility in semiconductors: semionic behaviour of $CuInSe_2$ |
| **Ali Zafor Chowdhury** and **Keiichiro Nasu** | 1193 | $T_{1u}$ Hubbard model for ferromagnetic and optical properties of potassium-doped zeolite |
| **E. Bassanese** and **J. Furlan** | 1201 | Charge-carrier transient response from steady-state in a-Si |
| **C. Weyl, J. Zhao, C. Lacour, F. Laher-Lacour** and **P. Thuéry** | 1211 | Investigation of a nanocrystalline $YBa_2Cu_3O_{7-\delta}$ powder by neutron and electron diffractions |
| **Yutaka Harima, Kazuhiko Takeda** and **Kazuo Yamashita** | 1223 | Molecular solid of zinc tetraphenylporphyrin as a model organic semiconductor with a well-defined depletion layer |
| **M. V. Ryzhkov, N. I. Medvedeva** and **V. A. Gubanov** | 1231 | Substitution of Pb by Ag as a way to obtain new high temperature superconductors: a quantum chemical point of view |
| **J. C. Bernede, T. Ben Nasrallah, M. Jamali, J. Y. Mevellec, C. Rabiller** and **A. Proutiere** | 1239 | Is a hydrogen bond responsible for the optical properties of some dihydroxyanthraquinones: quinizarin and anthraflavic? |

| | | |
|---|---|---|
| **M. Górska, J. R. Anderson, J. L. Peng** and **Z. Gołacki** | 1253 | Magnetization and susceptibility of $Sn_{1-x}Eu_xTe$:EuTe |
| **S. A. Kukushkin** and **V. V. Slyozov** | 1259 | Crystallization of binary melts and decay of supersaturated solid solutions at the Ostwald ripening stage under non-isothermal conditions |
| **L. A. Acuña** | 1271 | Thermal expansion and Schottky disorder: a new approach to its analysis |
| **P. Woafo, R. Takontchoup** and **A. S. Bokosah** | 1277 | Soliton mechanism of proton migration in hydrogen-bonded solids |
| **G. Malovichko, O. Cerclier, J. Estienne, V. Grachev, E. Kokanyan** and **C. Boulesteix** | 1285 | Lattice constants of K- and Mg-doped $LiNbO_3$. Comparison with nonstoichiometric lithium niobate |
| **K. Lüghausen, H. Siegert, Th. Woike** and **S. Haussühl** | 1291 | Softening of the elasticity tensor of $Na_2[Fe(CN)_5NO]\cdot 2H_2O$ upon generation of metastable electronic states by irradiation with light |
| | I | Keywords for the *Journal of Physics and Chemistry of Solids* |


**Number 10**

## *SPECIAL ISSUE*

## A Festschrift Issue in Honour of David E. Cox


| | | |
|---|---|---|
| | v | Preface |
| | vii | Dedication |
| **R. E. Morris, J. J. Owen** and **A. K. Cheetham** | 1297 | The structure of $La_4Ti_9O_{24}$ from synchrotron X-ray powder diffraction |
| **P. M. Woodward, A. W. Sleight** and **T. Vogt** | 1305 | Structure refinement of triclinic tungsten trioxide |
| **H. Toraya** and **T. Okuda** | 1317 | Crystal structure analysis of polycrystalline $Bi_3Fe_5O_{12}$ thin film by using asymmetric and symmetric diffraction techniques |
| **L. Paolasini, R. Caciuffo, G. H. Lander, J. Rebizant, D. A. Keen, N. Sato** and **T. Komatsubara** | 1323 | Anomalies in the normal-state properties of $UPd_2Al_3$ |
| **M. James, J. P. Attfield** and **J. Rodriguez-Carvajal** | 1331 | Synthesis, crystal structure and magnetism of $Sr_3Sb_2NiO_9$—a ferrimagnetic perovskite |
| **J. A. Hriljac, C. C. Torardi** and **T. Vogt** | 1339 | A high resolution powder neutron diffraction study of the novel layered oxide $BiMo_2O_7OD\cdot 2D_2O$ |
| **P. Bénard** and **D. Louër** | 1345 | The layer structure of $Zr(OH)_3NO_3$ determined *ab initio* using conventional monochromatic X-ray powder diffraction |
| **M. A. Roberts, A. N. Fitch** and **A. V. Chadwick** | 1353 | The crystal structures of $(NH_4)_3HGe_7O_{16}\cdot nH_2O$ and $Li_{4-x}H_xGe_7O_{16}\cdot nH_2O$ determined from powder diffraction data using synchrotron radiation |
| **A. N. Christensen, R. G. Hazell, A. M. T. Bell** and **A. Altomare** | 1359 | Precision of a crystal structure derived from a synchrotron X-ray powder pattern. The structure of barium oxalate hydrate $BaC_2O_4\cdot 2H_2O$ |

| | | |
|---|---|---|
| **R. W. Broach, N. K. McGuire, C. C. Chao** and **R. M. Kirchner** | 1363 | Direct methods structure determination from synchrotron powder diffraction data of a new clathrasil, TMA silicate |
| **C. Röhrig, I. Dierdorf** and **H. Gies** | 1369 | X-ray powder diffraction and NMR-spectroscopic investigations on a porous zincosilicate related to the zeolite VPI-7 (VSV) |
| **R. H. Jones, P. Lightfoot** and **R. M. Ormerod** | 1377 | The location of sorbed Kr in silicalite using resonant X-ray diffraction |
| **D. M. Poojary, D. Grohol** and **A. Clearfield** | 1383 | Crystal structure of uranyl chloromethylphosphonate from X-ray powder diffraction data |
| **L. W. Finger, R. M. Hazen** and **B. A. Fursenko** | 1389 | Refinement of the crystal structure of $BaSi_4O_9$ in the benitoite form |
| **P. A. Barrett, G. Sankar, C. R. A. Catlow** and **J. Meurig Thomas** | 1395 | Investigation of the structural stability of cobalt-containing AlPO-44 microporous materials |
| **T. Egami** | 1407 | Determining medium range order by powder diffraction |
| **P. Suortti, R Bateson, U. Lienert, S. Bramwell** and **V. Honkimäki** | 1415 | Energy-dispersive diffraction with synchrotron radiation as a probe of the source and magnetic form factors |
| **M. Popovici, W. B. Yelon, R. Berliner** and **B. J. Heuser** | 1425 | Two-bent-crystal technique in neutron small angle scattering |
| **T. Yamanaka** and **T. Yagi** | 1433 | Diffraction profile analysis of photosensitive silver halide |
| **H. Fujihisa, Y. Fujii, K. Takemura** and **O. Shimomura** | 1439 | Structural aspects of dense solid halogens under high pressure studied by X-ray diffraction—molecular dissociation and metallization |
| **J. E. Fischer, G. Bendele, R. Dinnebier, P. W. Stephens, C. L. Lin, N. Bykovetz** and **Q. Zhu** | 1445 | Structural analysis of fullerene and fulleride solids from synchrotron X-ray powder diffraction |
| **M. K. Crawford, R. L. Harlow, E. M. McCarron, N. Herron, W. E. Farneth, W. J. Donahue, B. A. Parkinson** and **J. Schirber** | 1459 | Synchrotron X-ray powder diffraction study of electrochemically oxidized $La_2CuO_{4+\delta}$ and $La_{2-x}Nd_xCuO_{4+\delta}$ |
| **P. G. Radaelli, M. Marezio, J. L. Tholence, S. De Brion, A. Santoro, Q. Huang, J. J. Capponi, C. Chaillout, T. Krekels** and **G. Van Tendeloo** | 1471 | Crystal structure of the double-Hg-layer copper oxide superconductor $(Hg,Pr)_2Ba_2(Y,Ca)Cu_2O_{8-\delta}$ as a function of doping |


**Number 11**

## *SPECIAL ISSUE*

## *Proceedings of the 1994 Conference on Magneto-optic Materials*


| | | |
|---|---|---|
| | iii | Publisher's Note |
| **W. R. Eppler** and **M. H. Kryder** | 1479 | Garnets for short wavelength magneto-optic recording |
| **M. S. S. Brooks, T. Gasche** and **B. Johansson** | 1491 | Calculated ground state, optical and magneto-optical properties of uranium sulphide |
| **W. A. Challener** | 1499 | Figures of merit for magneto-optic materials |

| | | |
|---|---|---|
| **B. R. Cooper, S. P. Lim, I. Avgin, Q. G. Sheng** and **D. L. Price** | 1509 | Trade-off between increased size and increased broadening of magneto-optic effects in cerium and uranium systems |
| **C. Detlefs, J. C. Lang, G. Srajer, A. I. Goldman, X. Wang, B. N. Harmon** and **R. W. McCallum** | 1517 | Evidence for quadrupolar contributions to the circular magnetic X-ray dichroism of rare earths |
| **B. N. Harmon, V. P. Antropov, A. I. Liechtenstein, I. V. Solovyev** and **V. I. Anisimov** | 1521 | Calculation of magneto-optical properties for 4*f* systems: LSDA + Hubbard *U* results |
| **E. D. Jones, J. F. Klem** and **S. K. Lyo** | 1525 | Magneto-optical studies of compound semiconductors |
| **J. Kübler** | 1529 | Calculated magneto-optical properties of metallic compounds |
| **Y. Murakami, A. Takahashi** and **S. Terashima** | 1535 | High density recording with a super resolution magneto-optical disk using magnetic field modulation method |
| **M.-A. Mycek, U. Siegner, S. Glutsch** and **D. S. Chemla** | 1543 | Ultrafast spectroscopy of GaAs under a magentic field: Coulomb correlated magnetoexcitons in the 3D to 1D transition |
| **D. J. Sellmyer, R. D. Kirby, J. Chen, K. W. Wierman, J. X. Shen, Y. Liu, B. W. Robertson** and **S. S. Jaswal** | 1549 | Magneto-optical and structural properties of nanocrystalline MnBi-based films |
| **S. Uchiyama, X. Y. Yu** and **S. Tsunashima** | 1557 | Magneto-optical Kerr effect of rare earth–transition metal amorphous alloy and multilayer films |
| **D. Weller, A. Carl, R. Savoy, T. C. Huang, M. F. Toney** and **C. Chappert** | 1563 | Structural transitions and magnetic anisotropy in ultrathin Co wedges on Pt(111) investigated with the magneto-optical Kerr effect |
| | I | Keywords for the *Journal of Physics and Chemistry of Solids* |


**Number 12**

*SPECIAL ISSUE*

## SPECTROSCOPIES IN NOVEL SUPERCONDUCTORS


| | | |
|---|---|---|
| **Z.-X. Shen, D. Liebenberg** and **A. Bansil** | xv | Preface |
| | xvii | List of Participants |
| | xxi | Scientific Program of the Conference |
| *Theory* | | |
| **A. A. Abrikosov** | 1567 | On the nature of the order parameter in HTSC and influence of impurities |
| **O. K. Andersen, A. I. Liechtenstein, O. Jepsen** and **F. Paulsen** | 1573 | LDA energy bands, low-energy Hamiltonians, t′, t″, $t_\perp(k)$, and $J_\perp$ |
| **P. W. Anderson** | 1593 | A battery of smoking guns (for the non-Fermi liquid-interlayer theory of high-$T_c$ cuprates)? |
| **N. Bulut** and **D. J. Scalapino** | 1597 | Evolution of the single-particle spectral weight with doping |

| | | |
|---|---|---|
| **S. Doniach** | 1601 | Reflections on the superconductor-insulator transition |
| **P. J. Hirschfeld** | 1605 | Impurity scattering and order parameter symmetry in high-$T_c$ superconductors |
| **L. B. Ioffe** and **A. J. Millis** | 1611 | Magnetic properties of high temperature superconductors: a spin liquid approach |
| **H. Kajueter** and **G. Kotliar** | 1615 | Spectral functions of correlated electron systems in the local impurity self-consistent approximation |
| **C. Kallin, A. J. Berlinsky, A. L. Fetter, M. Franz** and **P. I. Soininen** | 1619 | Vortices in $d$-wave superconductors |
| **V. Z. Kresin, S. A. Wolf, S. D. Adrian, M. E. Reeves** and **Yu. N. Ovchinnikov** | 1623 | Energy spectrum of high-$T_c$ oxides: two-gap structure, gaplessness, and implications |
| **R. B. Laughlin** | 1627 | Evidence for electron decay in photoemission from $Sr_2CuO_2Cl_2$ |
| **P. A. Lee** and **K. Kuboki** | 1633 | Energy gap structure in bilayer oxide superconductors |
| **R. S. Markiewicz** | 1637 | Pseudogaps in the van Hove Jahn-Teller scenario |
| **A. J. Millis, L. B. Ioffe** and **H. Monien** | 1641 | Spin gaps in high temperature superconductors |
| **A. Moreo, A. Nazarenko, S. Haas, A. Sandvik** and **E. Dagotto** | 1645 | Study of ARPES data and $d$-wave superconductivity using electronic models in two dimensions |
| **D. Pines** and **P. Monthoux** | 1651 | $d_{x^2-y^2}$ pairing and spin fluctuations in the cuprate superconductors: a progress report |
| **R. Preuss, R. Putz, W. Hanke** and **W. von der Linden** | 1659 | Continuous evolution of the 2D Hubbard model from an insulator to a metal |
| **T. M. Rice, M. Troyer** and **H. Tsunetsugu** | 1663 | The $d$-wave resonance valence bond state |
| **D. J. Scalapino** | 1669 | Distinguishing high-$T_c$ theories |
| **J. R. Schrieffer** and **A. P. Kampf** | 1673 | ARPES: novel effect in the energy and momentum distributions |
| **A. Sokol** | 1679 | Magnetic behavior of the cuprate superconductors |
| **C. M. Varma** | 1685 | Symmetry of the superconducting state in copper-oxides |
| **J. Ashkenazi** | 1691 | Two types of charge carriers in the high-$T_c$ cuprates |
| **B. Barbiellini, M. J. Puska, A. Harju** and **R. M. Nieminen** | 1693 | Positron annihilation and positron-electron correlation effects in high-$T_c$ oxides |
| **A. J. Berlinsky, A. L. Fetter, M. Franz, C. Kallin** and **P. I. Soininen** | 1695 | Ginzburg-Landau theory of the Abrikosov lattice in a $d$-wave superconductor |
| **H. A. Blackstead** and **J. D. Dow** | 1697 | Charge-transfer and the location of superconducting holes in $La_{2-\beta}Sr_\beta CuO_4$ |
| **B. H. Brandow** | 1699 | A valence-fluctuation mechanism with highly anisotropic $s$-wave pairing |
| **J. M. Byers** and **M. E. Flatté** | 1701 | Two-protrusion STM on an anisotropic superconductor |
| **C. Chen** | 1703 | Correlation-induced electron-lattice interaction in the Hubbard model: its effects on the spectral distribution |

| | | |
|---|---|---|
| **L. Chen** and **P. Bernard** | 1705 | Spin fluctuations in high-$T_c$ superconductors with two Fermi surface sheets |
| **A. V. Chubukov, D. M. Frenkel, G. Blumberg** and **M. V. Klein** | 1707 | Resonant two-magnon Raman scattering in antiferromagnetic insulators |
| **E. Dagotto, A. Nazarenko, A. Moreo** and **S. Haas** | 1709 | A simple theory for the cuprates: the antiferromagnetic van Hove scenario |
| **T. P. Devereaux** | 1711 | Raman scattering in disordered unconventional superconductors |
| **M. V. Eremin, S. G. Solovjanov** and **S. V. Varlamov** | 1713 | Some novel features of the bands in HTSC |
| **M. E. Flatté** | 1717 | Measuring a superconductor's gap anisotropy with EELS |
| **N. Hamada, H. Sawada** and **K. Terakura** | 1719 | Electronic band structure of $La_{1-x}Ba_xMnO_3$ |
| **S. Kashiwaya, Y. Tanaka, M. Koyanagi, H. Takashima** and **K. Kajimura** | 1721 | Tunneling spectroscopy of $d$-wave superconductors |
| **H. Kim** and **E. J. Nicol** | 1725 | Effect of impurity scattering on a $d+s$ wave superconductor: low temperature behavior of penetration depth |
| **V. N. Kostur** and **B. Mitrovic** | 1727 | Weak electron-phonon interaction and strong phonon features in $a-b$-plane optical conductivity of high-$T_c$ superconductors |
| **S. Liang** | 1729 | Correlation energy cascade in two dimensional Hubbard model |
| **D. Z. Liu, J. Maly** and **K. Levin** | 1733 | $\pi$ junctions in $s$-wave superconductors: bi-layer effects |
| **K. Matho** | 1735 | Photomission: low-energy and high-energy scales |
| **N. Nagaosa** and **T.-K. Ng** | 1737 | Nonmagnetic impurities in high-$T_c$ cuprates |
| **B. Normand, H. Kohno** and **H. Fukuyama** | 1739 | Superconductive phonon anomalies in high-$T_c$ cuprates |
| **Y. Ohta** and **R. Eder** | 1741 | Hole pockets, shadow bands, and spin bags in the doped $t-J$ model |
| **F. Onufrieva** | 1743 | Evidence for $d_{x^2-y^2}$ symmetry of superconducing order parameter in YBCO from neutron scattering data |
| **C.-H. Pao** and **H.-B. Schüttler** | 1745 | Isotope effect in spin fluctuation models |
| **W. O. Putikka** | 1747 | Magnetic frustration and spin-charge separation in 2D strongly correlated electron systems |
| **Y. Ren, J. H. Xu** and **C. S. Ting** | 1749 | Spontaneous generation of $s$-wave component in a purely $d$-wave superconductor |
| **C. O. Rodriguez, R. Weht, M. Weissmann** and **N. E. Christensen** | 1751 | Are surface effects to be included in the study of the electronic structure of high temperature superconductors? |
| **S. K. Sarker** | 1753 | Confinement in the three-dimensional anisotropic $t-J$ model: a mean-field study |
| **H. Sawada, N. Hamada** and **K. Terakura** | 1755 | Phase stability and magnetic property of $LaCo_{1-x}Ni_xO_3$ |
| **J. Tanaka, M. Shimizu** and **K. Kamiya** | 1759 | Interpretation of electronic Raman and angle resolved photoemission spectra of $Bi_2SR_2CaCu_2O_8$ |

| | | |
|---|---|---|
| **Y. Tanaka** and **S. Kashiwaya** | 1761 | Josephson effect in $d_{x^2-y^2}$-wave superconductors |
| **A. M. Tikofsky** and **D. B. Bailey** | 1763 | A gapless time-reversal symmetry violating superconductor |
| **Y. Ushijima, Y. Tanaka** and **H. Tsuchiura** | 1767 | Energy spectrum of quasiparticles for various pairing states in 2-D extended Hubbard model |
| **Y. M. Vilk** and **A.-M. S. Tremblay** | 1769 | Destruction of the Fermi liquid by spin fluctuations in two dimensions |
| **G. Wendin** and **V. S. Shumeiko** | 1773 | Giant Josephson current through a single bound state in a superconducting tunnel junction |
| **Z. Y. Weng, D. N. Sheng** and **C. S. Ting** | 1775 | Spin-charge separation in the $t-J$ model |
| **V. M. Yakovenko** and **I. I. Mazin** | 1777 | On the interpretation of neutron scattering in superconducting $YBa_2Cu_3O_7$ |
| **S. Yunoki** and **S. Maekawa** | 1779 | Effects of long-range interaction in one-dimensional electron systems |
| **Y. Zha, S. L. Cooper** and **D. Pines** | 1781 | Spin pseudogap and $c$-axis transport |
| *Quantum Interference and Tunneling Experiments* | | |
| **H. R. Ott** and **D. A. Brawner** | 1783 | Experimental evaluation of the order parameter symmetry of superconductors |
| **C. C. Tsuei, J. R. Kirtley, M. Rupp, J. Z. Sun, L.-S. Yu-Jahnes, C. C. Chi, A. Gupta** and **M. B. Ketchen** | 1787 | Flux quantization in tricrystal cuprate rings—a new role of pairing symmetry |
| **D. A. Wollman, D. J. Van Harlingen, J. Giapintzakis** and **D. M. Ginsberg** | 1797 | Tunneling in Pb-YBCO junctions: determining the symmetry of the pairing state |
| **R. Aoki, H. Murakami, T. Kita, M. Shirai, V. M. Svistunov, A. E. Dyachenko** and **D. N. Affanassyev** | 1801 | Tunneling observation of phonon contribution to the pairing interaction in oxide superconductors |
| **H. L. Edwards, D. J. Derro, A. L. Barr, J. T. Markert** and **A. L. de Lozanne** | 1803 | A study of the CuO chains in $YBa_2Cu_3O_{7-x}$ by scanning tunneling microscopy and spectroscopy |
| **J. H. Miller, Jr., Q. Y. Ying, Z. G. Zou, J. H. Xu, M. F. Davis** and **N. Q. Fan** | 1805 | Use of cuprate tricrystal microbridges as probes of superconducting pairing state symmetry |
| **H. Murakami** and **R. Aoki** | 1807 | LT-STM/STS observations on different atomic layers of BSCCO(2212) |
| **J. M. Valles, Jr., S.-Y. Hsu** and **J. A. Chervenak** | 1809 | Electron tunneling spectroscopy near the magnetic field tuned superconductor to insulator transition |
| *Optical and Raman Experiments* | | |
| **H. Eisaki** and **S. Uchida** | 1811 | Optical study of high-$T_c$ superconductors and related oxides |
| **B. Parks, J. Orenstein, R. Mallozzi, D. T. Nemeth, F. Ludwig, J. Clarke, P. Merchant, D. J. Lew, I. Bozovic** and **J. N. Eckstein** | 1815 | Re-examining the vortex state of cuprate superconductors with gap anisotrophy |
| **T. Timusk, D. N. Basov** and **C. C. Homes** | 1821 | The strange interplane conductivity of HTSC |
| **D. van der Marel** and **J. H. Kim** | 1825 | In-plane and out-of-plane charge dynamics of high-$T_c$ cuprates |

| | | |
|---|---|---|
| **A. Bock, R. Kürsten** and **U. Merkt** | 1829 | Oxygen diffusion in laser heated $YBa_2Cu_3O_7$ films |
| **G. S. Kino, I. M. Fishman, X. D. Wu** and **W. R. Studenmund** | 1831 | Modulation measurements of $YBa_2Cu_3O_{7-\delta}$ optical reflectivity using a thermal wave technique |
| **A. P. Litvinchuk, M. Käll, L. Börjesson, P. Berastegui** and **L.-G. Johansson** | 1833 | Substitution of Pr for Y in $YBa_2Cu_4O_8$ and $YBa_2Cu_{3.5}O_{7.5-\delta}$ superconductors: phonon modes and charge transfer effects |
| **A. Matic, M. Käll, L. Börjesson** and **Y. Eltsev** | 1835 | Influence of Zn-doping of the electronic Raman scattering of $YBa_2Cu_3O_{7-\delta}$ |
| **K. M. Paget, T. R. Lemberger, S. R. Foltyn** and **X. Wu** | 1837 | Comparison of chain (Co) and plane (Zn) dopants on charge transport in $YBa_2Cu_3O_{7-\delta}$ |
| **J. Schützmann, S. Tajima, S. Miyamoto** and **S. Tanaka** | 1839 | Doping dependence of the optical $c$-axis conductivity in $YBa_2C_3O_7$ |
| **B. Stradlober, G. Krug, R. Nemetschek, M. Opel, R. Hackl, D. Einzel, C. Schuster, T. P. Devereaux, L. Forró, J. L. Cobb, J. T. Markert** and **J. J. Neumeier** | 1841 | Study of $k$-dependent electronic properties in cuprate superconductors using Raman spectroscopy |
| **W. R. Studenmund, I. M. Fishman** and **G. S. Kino** | 1843 | Symmetry of differential optical responses of normal and superconducting phases in single-crystal YBCO |
| *Photoemission Experiments* | | |
| **P. Aebi, J. Osterwalder, P. Schwaller, H. Berger, C. Beeli** and **L. Schlapbach** | 1845 | Complete Fermi surface mapping of Bi-cuprates |
| **J. W. Allen, G.-H. Gweon, R. Claessen** and **K. Matho** | 1849 | Fermi liquids and non-Fermi liquids—the view from photoemission |
| **A. Bansil** and **M. Lindroos** | 1855 | Angle-resolved photo-intensities in high-$T_c$'s: surface states, $CuO_2$ plane bands, lineshapes, and related issues |
| **J. C. Campuzano, H. Ding, A. Bellman, M. R. Norman, M. Randeria, G. Jennings, T. Yokoya, T. Takahashi, H. Katayama-Yoshida, T. Mochiku** and **K. Kadowaki** | 1863 | ARPES studies in the normal and superconducting state of $Bi_2Sr_2CaCu_2O_8$ |
| **D. King, D. S. Dessau, A. G. Loeser, Z.-X. Shen** and **B. O. Wells** | 1865 | Electronic structure evolution from Mott insulator to superconductor—an angle-resolved photoemission investigation |
| **B. O. Wells, Z.-X. Shen, A. Matsuura, D. M. King, M. A. Kastner, M. Greven** and **R. J. Birgeneau** | 1871 | Band mapping of the model insulator $Sr_2CuO_2Cl_2$—dispersion of a single hole in an antiferromagnetic background |
| **A. Fujimori, K. Kobayashi, T. Mizokawa, K. Mamiya, A. Sekiyama, H. Takagi, H. Eisaki, S. Uchida, R. J. Cava, J. J. Krajewski** and **W. F. Peck, Jr.** | 1875 | Spectral weight transfer and mass renormalization in $Ln Ni_2B_2C$ ($Ln$ = Y, La) |
| **S. Gonda, M. Kawasaki, S. Ohashi, Y. Kotaka, K. Kishio** and **H. Koinuma** | 1877 | Superconducting gap observation by high-resolution photoelectron yield spectroscopy |
| **C. G. Olson, J. G. Tobin, G. D. Waddill, D. W. Lynch** and **J. Z. Liu** | 1879 | The 1 eV peak: a consistent feature of the cuprate superconductors |
| **D. M. Poirier, C. G. Olson, D. W. Lynch, M. Schmidt, B. K. Cho** and **P. C. Canfield** | 1881 | Observation of band dispersion in $YNi_2B_2C$ |

| | | |
|---|---|---|
| **N. Terada, K. Tokiwa, H. Ozawa, A. Iyo, S. Ishibashi** and **H. Ihara** | 1883 | Photoemission spectroscopy of $Cu_{1-x}Ba_2Ca_{n-1}Cu_nO_{2n+4-\delta}$ ceramics and thin films |
| **T. Yokoya, A. Chainani, T. Takahashi, H. Katayama-Yoshida, M. Kasai** and **Y. Tokura** | 1885 | Angle-resolved and resonant photoemission study of $Sr_2RuO_4$ |
| *Transport and Thermodynamic Properties* | | |
| **C. W. Chu, Y. Y. Xue, Y. Cao** and **Q. Xiong** | 1887 | Doping effect on the penetration depth of $HgBa_2CuO_{4+\delta}$ |
| **Z. Fiske** and **J. L. Sarrao** | 1891 | Materials and high-$T_c$ |
| **K. Krishana, J. M. Harris** and **N. P. Ong** | 1895 | Quasi-particle mean-free-path and thermal Hall conductivity in $YBa_2Cu_3O_7$ |
| **K. A. Moler, A. Kapitulnik, D. J. Baar, R. Liang** and **W. N. Hardy** | 1899 | Specific heat of $YBa_2Cu_3O_{7-\delta}$ single crystals: implications for the vortex structure |
| **C. Boekema, I. M. Suarez-Barnes, V. A. Gubanov, D. W. Cooke** and **M. Leon** | 1905 | Anomalies in vortex states of cuprate superconductors |
| **J. A. Clayhold** and **C. W. Chu** | 1907 | Quasiparticle contribution to the mixed-state thermopower in $Tl_2Ba_2CaCu_2O_{8+\delta}$ |
| **Y. Y. Xue, Y. Cao, Q. Xiong, F. Chen** and **C. W. Chu** | 1909 | Field-independent magnetization and fluctations in Hg-based cuprates |
| *Neutron and NMR Experiments* | | |
| **G. Aeppli, T. E. Mason, H. A. Mook** and **S. M. Hayden** | 1911 | Magnetic fluctuations in lamellar copper oxides |
| **R. J. Birgeneau, A. Aharony, N. R. Belk, F. C. Chou, Y. Endoh, M. Greven, S. Hosoya, M. A. Kastner, C. H. Lee, Y. E. Lee, G. Shirane, S. Wakimoto, B. O. Wells** and **K. Yamada** | 1913 | Magnetism and magnetic fluctuations in $La_{2-x}Sr_xCuO_4$ for $x = 0$ (2D antiferromagnet), 0.04 (3D spin glass) and $x = 0.15$ (superconductor) |
| **T. Imai, C. P. Slichter, J. L. Cobb** and **J. T. Markert** | 1921 | Superconductivity and spin fluctuations in the electron-doped infinitely-layered high $T_c$ superconductor $Sr_{0.9}La_{0.1}CuO_2$ ($T_c = 42$ K) |
| **B. Keimer, H. F. Fong, D. Reznik, F. Dogan** and **I. A. Aksay** | 1927 | Resonant neutron scattering from $YBa_2Cu_3O_7$ |
| **Y. Kitaoka, K. Ishida, G.-Q. Zheng, H. Tou, K. Magishi, S. Matsumoto, K. Yamazoe, H. Yamanaka** and **K. Asayama** | 1931 | NMR study in novel superconductor—heavy Fermion system and high-$T_c$ cuprate |
| **P. Bourges, Y. Sidis, L. P. Regnault, B. Hennion, R. Villeneuve, G. Collin, C. Vettier, J.-Y. Henry** and **J. F. Marucco** | 1937 | Comparison of antiferromagnetic fluctuations in zinc-free and zinc-doped YBCO in fully oxidized samples. Studies by inelastic neutron scattering |
| **Y.-Q. Song, A. P. Reyes, X. P. Tang, W. P. Halperin** and **D. Hinks** | 1939 | $^{63}Cu$ NMR in heavily doped $La_2CuO_4$ |
| *Microwave Experiments* | | |
| **D. A. Bonn, S. Kamal, K. Zhang, R. Liang** and **W. N. Hardy** | 1941 | The microwave surface impedance of $YBa_2Cu_3O_{7-\delta}$ |
| **T. Jacobs, S. Sridhar, C. T. Rieck, K. Scharnberg, T. Wolf** and **J. Halbritter** | 1945 | Microwave surface impedance of $Y_1Ba_2Cu_3O_{7-\delta}$ |

*Positron Spectroscopy and Other Experiments*

**A. A. Manuel, A. Shukla, L. Hoffman, T. Jarlborg, B. Barbiellini, S. Massidda, W. Sadowski, E. Walker, A. Erb** and **M. Peter** 1951 Fermi surfaces of high-$T_c$ superconductors by positron 2D-ACAR

**S. Ishibashi, A. A. Manuel** and **L. Hoffmann** 1955 Positron 2D-ACAR in TTF-TCNQ

*Other Systems*

**G. Baskaran** 1957 Are there similarities between the layered nickel borocarbide and cuprate superconductors?

**M. B. Maple, Y. Dalichaouch, M. C. de Andrade, N. R. Dilley, J. Herrmann** and **R. Movshovich** 1963 Recent issues in the physics of heavy Fermion materials

*Summary*

**P. B. Allen** 1969 Spectroscopies in novel superconductors—a conference summary

*After Dinner Talk*

**T. H. Geballe** 1973 An after dinner talk—a gap that shouldn't be

# AUTHOR INDEX


Abraham C., 397
Abrikosov A. A., 1567
Abu-Elazm A. M., 141
Ackland G. J., 329, 495
Acuña L. A., 1271
Adam F., 1063
Adams A. R., 349, 423, 469
Adrian S. D., 1623
Aebi P., 1845
Aeppli G., 1911
Affanassyev D. N., 1801
Aharony A., 1913
Aida M., 1131
Akbarzadeh H., 329
Akimoto R., 531
Akinaga H., 407
Aksay I. A., 1927
Allan D. R., 539, 545
Allen J. W., 1849
Allen P. B., 1969
Altomare A., 1359
Alvarez-Fregoso O., 117
Andersen O. K., 1573
Anderson J. R., 1253
Anderson P. W., 1593
Ando K., 407
de Andrade M. C., 1963
Andrés J., 901
Andryushchenko V. A., 1085
Aneva Z., 241
Antonov A. V., 767
Aoki R., 1801, 1807
Aoyagi Y., 123
Arai M., 491
Arai T., 491
Arakcheeva A. V., 925
Asano H., 183
Asayama K., 1931
Ashkenazi J., 1691
Atake T., 179
Attfield J. P., 1331
Augsburger M. S., 1081
Austing D. G., 475

Baar D. J., 1899
Babonas G.-J., 925
Bae J. W., 663
Baidakov V. V., 319
Bailey D. B., 1763
Baj M., 589
Bak J., 563
Balakirev V. F., 767
Bansil A., xv, 1855
Baran E. J., 135
Barb D., 79
Barberis G. E., 1141
Barbiellini B., 1693, 1951
Barnham K. W. J., 459
Barr A. L., 1803
Barrett P. A., 1395
Bartram R. H., 863
Baskaran G., 1957
Basov D. N., 1821
Bassanese E., 1201
Bateson R., 1415
Batirev I. G., 93
Batra A. P., 151
Baugher E. M., 323
Beeli C., 1845
Belk N. R., 1913
Bell A. M. T., 1359
Bellman A., 1863
Beltrán A., 901
Bendele G., 1445
Berastegui P., 1833
Berger H., 1845
Berliner R., 1425
Berlinsky A. J., 1619, 1695
Bernard P., 1705
Bernasconi M., 501
Bernede J. C., 1239
Bertheville B., 989
Besson J. M., 525
Bénard P., 1345
Bhattacharya D. P., 165
Birgeneau R. J., 1871, 1913
Blackstead H. A., 1697
Blasse G., 261, 267, 673, 959
Blumberg G., 1707
Bock A., 1829
Boćkowski M., 639
Boekema C., 1905
Boesman E., 813
Bokosah A. S., 1277
Bonn D. A., 1941
Boulesteix C., 1285
Bouma B., 261
Bourges P., 1937
Boutinaud P., 1147
Bozovic I., 1815

Börjesson L., 1833, 1835
Bramwell S., 1415
Brandow B. H., 1699
Brandt O., 385
Braunstein R., 141
Brawner D. A., 1783
de Brion S., 1471
Broach R. W., 1363
Brusenbach P., 663
Buchan N., 311
Buchanan D. N. E., 745
Bulou A., 285
Bulut N., 1597
Burnett J. H., 375
Byers J. M., 1701
Bykov I. P., 919
Bykovetz N., 1445
Byoung-Koo Choi, 1023

Caciuffo R., 1323
Cahen D., 1165
Caillat T., 195
Calderón E., 507
Callens F., 813
Calzada M. L., 15
Campuzano J. C., 1863
Canfield P. C., 1881
Cao G., 981
Cao Y., 1887, 1909
Capponi J. J., 1471
Cardona M., 567
Carle M., 195, 201
Cassart M., 99
Catlow C. R. A., 799, 1395
Cava R. J., 1875
Cerclier O., 1285
Chadi D. J., 585
Chadwick A. V., 1353
Chaillout C., 1471
Chainani A., 1885
Chandrasekhar H. R., 323, 357
Chandrasekhar M., 323, 357
Chao C. C., 1363
Chattopadhyay P., 189
Cheetham A. K., 1297
Chen C., 1703
Chen F., 1909
Chen G., 1095
Chen L., 1705
Chen Z., 981
Cheong H. M., 375
Chernyak L., 1165
Chervenak J. A., 1809
Chervin J. C., 335, 571
Chi C. C., 1787
Chiarotti G. L., 501
Cho B. K., 1881
Cho K.-I., 293
Choe S.-H., 89
Choi I.-H., 595
Choi-Feng C., 607
Chong D. P., 1131
Chou F. C., 1913
Chowdhury A. Z., 1193
Christensen A. N., 1359
Christensen N. E., 1751
Christofilos D., 1125
Chu C. W., 1887, 1907, 1909
Chu H. T., 1069
Chubukov A. V., 1707
Chung S. J., 445
Claessen R., 1849
Clark S. J., 329, 495
Clarke J., 1815
Clayhold J. A., 1907
Clearfield A., 1383
Cleary D. A., 69
Clerc D. G., 69
Cobb J. L., 1841, 1921
Collin G., 1937
Concas G., 877
Congiu F., 877
Contreras S., 599
Cooke D. W., 1905
Cooper S. L., 1781
Cota-Araiza L., 117
Crain J., 495
Crawford M. K., 1459

Dagotto E., 1645, 1709
Dalichaouch Y., 1963
Dalton K. S. H., 453
Daly M. S., 381, 453
Danebrock M. E., 807
Davis M. F., 1805
De Lucas M. C. M., 995
De Mello Donegá C., 267, 673
Demouge A., 99, 1155
Deol R. S., 311
Deroide B., 989
Derro D. J., 1803
Dessau D. S., 1865
Devereaux T. P., 1711, 1841
Dieckmann R., 715, 725
Dierdorf I., 1369
Diez R. P., 135
Dilley N. R., 1963
Dimza V., 919
Ding H., 1863
Dinnebier R., 1445

Dirksen G. J., 267, 959
Dmowski L. H., 589
Dogan F., 1927
Donahue W. J., 1459
Doniach S., 1601
Dow J. D., 1697
Dunstan D. J., 349, 423
Dupare J. G., 173
Dupre B., 1063
Dwivedi B. P., 39
Dyachenko A. E., 1801

Eaves L., 403
Eberl K., 367
Eckstein J. N., 1815
Eder R., 1741
Edwards H. L., 1803
Egami T., 1407
Einzel D., 1841
Eisaki H., 1811, 1875
Elman B., 375
Eltsev Y., 1835
Emery J., 51
Endo K., 1131
Endo S., 531
Endoh Y., 1913
Erb A., 1951
Eremin M. V., 1713
Ermakov V. N., 319
Ernst S., 367, 567
Estienne J., 1285

Fan N. Q., 1805
Fang X. M., 363
Farach H. A., 301
Farneth W. E., 1459
Farías M. H., 117
Faucher M., 1147
Feld S., 663
Fetter A. L., 1619, 1695
Finger L. W., 1389
Fischer J. E., 1445
Fishman I. M., 1831, 1843
Fiske Z., 1891
Fitch A. N., 1353
Flatté M. E., 1701, 1717
Focher P., 501
Folkerts H. F., 267
Foltyn S. R., 1837
Fong H. F., 1927
Forró L., 1841
Foxon C. T., 381, 459
Franz M., 1619, 1695
Frenkel D. M., 1707

Fujihisa H., 1439
Fujii Y., 1439
Fujimori A., 1875
Fukuyama H., 1739
Funato M., 607
Furdyna J. K., 323
Furlan J., 1201
Fursenko B. A., 1389

Gao Y., 285
Garcia D., 1147
Gardant N., 1003
Gartsman K., 1165
Gauthier M., 525
Geballe T. H., 1973
Genotelle M., 1003
Ghandehari K., 517
Ghorai A. K., 165
Ghosh D., 35
Giapintzakis J., 1797
Gies H., 1369
Ginsberg D. M., 1797
Gleitzer C., 1063
Glinchuk M. D., 919
Goldner Ph., 1003
Golikov Yu. V., 767
Gonda S., 1877
González J., 335, 481, 507, 571
Goñi A. R., 367, 385, 567
Goodnick S. M., 669
Gopalakrishnan R., 277
Gorban' I. S., 603
Gorin A. E., 319
Gougam A., 615
Górska M., 1253
Gołacki Z., 1253
Grabmaier B. C., 907
Grachev V., 1285
Grasselli M. C., 135
Greene R. G., 517, 521
Gregus J., 407
Greven M., 1871, 1913
Grey R., 429, 475
Grima P., 525
Grohol D., 1383
Gröne A., 687
Gryk T. J., 863
Grynberg M., 619
Grzechnik A., 159
Grzegory I., 353, 639
Gubanov V. A., 1231, 1905
Guohong Xiong, 859
Gupta A., 1787
Güdel H. U., 995
Gweon G.-H., 1849

Haas S., 1645, 1709
Hackl R., 1841
Haines J., 965
Haire R. G., 1095
Halbritter J., 1945
Halperin W. P., 1939
Hamada N., 1719, 1755
Han H. X., 389
Hanfland H., 525
Hanke W., 1659
Happek U., 735
Hara H., 223
Hardy W. N., 1899, 1941
Harima Y., 1223
Harju A., 1693
Harlingen D. J. van, 1797
Harlow R. L., 1459
Harris J. J., 381, 445, 459
Harris J. M., 1895
Hasbun J. E., 791
Hashimoto T., 777
Hatano T., 531
Hatton P. D., 495
Haussühl S., 1291
Haüserman D., 525
Hayden S. M., 1911
Hazell R. G., 1359
Hazen R. M., 1389
Hempel T., 123
Henini M., 403
Hennion B., 1937
Henry J.-Y., 1937
Herrmann J., 1963
Herron N., 1459
Heuberger W., 311
Heuser B. J., 1425
Hill G., 403, 463, 475
Hinks D., 1939
Hirasawa R., 777
Hirata T., 951
Hirschfeld P. J., 1605
Hitomi S., 393
Hiu C.-L., 233
Ho-Jun Song, 787
Hoffman L., 1951
Hoffmann L., 1955
Holmes S., 445, 459
Homes C. C., 1821
Honkimäki V., 1415
Hosoya S., 1913
Hossain T. Z., 735
Hoyau S., 965
Hrabovský M., 919
Hriljac J. A., 1339
Hsu S.-Y., 1809
Hu S., 27
Huang Q., 1471
Huang Y., 233
Hussain M. A., 255

Igualada J. A., 901
Ihara H., 1883
Ikemoto I., 107, 849
Imai T., 1921
Ingle S. G., 173
Ioffe L. B., 1611, 1641
Ishibashi S., 1883, 1955
Ishida K., 1931
Ishigaki T., 183
Itié J. P., 481, 507, 525, 555
Iyo A., 1883

Jacobs T., 1945
Jakubowicz A., 311
Jamali M., 1239
James B. D., 277
James M., 1331
Janicki J., 819
Janik E., 415
Januszczyk M., 819
Jarlborg T., 1951
Jastrabík L., 919
Jeitschko W., 807
Jennings G., 1863
Jepsen O., 1573
Jhon M. S., 293
Jiang De-S., 397
Jiang S., 363
Jiang Z. T., 277
Jimenez B., 15
Johansson L.-G., 1833
Jones E. D., 357
Jones R. H., 1377
Jonker B. T., 563
Jun J., 353, 639

Kadowaki K., 1863
Kajimura K., 1721
Kajueter H., 1615
Kakde R. N., 173
Kallin C., 1619, 1695
Kamal S., 1941
Kamata H., 943
Kamiya K., 1759
Kamiyama T., 183
Kampf A. P., 1673
Kanda H., 559
Kaneda Y., 1131
Kapitulnik A., 1899
Kapphan S., 687

Karczewski G., 415
Kasai M., 1885
Kashiwaya S., 1721, 1761
Kastner M. A., 1871, 1913
Katayama Y., 559
Katayama-Yoshida H., 1863, 1885
Kato H., 631
Kawaji H., 179
Kawano K., 703
Kawasaki M., 1877
Kayama H., 345
Käll M., 1833, 1835
Keen D. A., 1323
Keimer B., 1927
Ketchen M. B., 1787
Khan-cheema U. M., 463
Khanna B. N., 39
Kikegawa T., 751
Kikuchi K., 107, 849
Kim H. M., 607
Kim H., 1725
Kim J. H., 1825
Kim W.-T., 89
King D. M., 1871
King D., 1865
Kino G. S., 1831, 1843
Kirchner R. M., 1363
Kirtley J. R., 1787
Kishio K., 1877
Kita T., 1801
Kitaoka Y., 1931
Klein M. V., 1707
Klipstein P. C., 429, 435, 463, 475
Knap W., 469
Knobbe E. T., 79
Kobayashi K., 1875
Kobayashi M., 341, 531
Kobayashi T., 311, 345
Kobbi F., 599
Kohno H., 1739
Koinuma H., 1877
Kojima H., 311, 345
Kokanyan E., 1285
Kolomoets V. V., 319
Komatsubara T., 1323
Komori R., 535
Kopelev N. S., 1089
Kossut J., 415
Kostur V. N., 1727
Kotaka Y., 1877
Koteles E. S., 375
Kotliar G., 1615
Kourouklis G. A., 1125
Kowalski K., 1063
Koyanagi M., 1721
Köstler W., 907
Krajewski J. J., 1875
Krekels T., 1471
Kresin V. Z., 1623
Krier A., 759
Krishana K., 1895
Kruczyński Z., 819
Krug G., 1841
Krukowski St., 639
Kuboki K., 1633
Kucharczyk W., 871
Kuhn O., 403
Kukushkin S. A., 211, 831, 1259
Kulikov L. A., 1089
Kumar A., 215
Kumar M. R., 825
Kusaba K., 751
Kutrowski M., 415
Kürsten R., 1829

Lacour C., 1209
Laguta V. V., 919
Lahalle-Gravier C., 195, 201
Laher-Lacour F., 1209
Laisaar A., 603
Lakrimi M., 453
Lan G., 27
Lancefield D., 469
Lander G. H., 1323
Lari-Guillet F., 51
Laughlin R. B., 1627
Lavat A. E., 135
Le Flem G., 1147
Lee C.-H., 233, 1913
Lee J.-W., 293
Lee P. A., 1633
Lee Y. E., 1913
Leibenguth R., 663
Leiro J. A., 93
Lemberger T. R., 1837
Lenoir B., 99, 1155
Leon M., 1905
Leonyuk L. I., 925
Levi Z., 241
Levin K., 1733
Lew D. J., 1815
Léger J. M., 965
Li G. H., 385
Liang R., 1899, 1941
Liang S., 1729
Lichanot A., 915
Liebenberg D., xv
Liechtenstein A. I., 1573
Lienert U., 1415

Liesegang J., 277
Lightfoot P., 1377
Lii K.-H., 233
Lin C. L., 1445
Lindroos M., 1855
Litvinchuk A. P., 1833
Litwin-Staszewska E., 411, 469, 599
Liu D. Z., 1733
Liu J. Z., 1879
Liu K.-T., 233
Liu X., 389
Lizzo S., 959
Loeser A. G., 1865
Lopez O. A., 301
Louër D., 1345
Loveday J. S., 539
de Lozanne A. L., 1803
Lu F.-H., 715, 725
Lubczyński W., 453
Lubman G. U., 925
Ludwig F., 1815
Luo H., 323, 517, 521
Łucznik B., 639
Lüghausen K., 1291
Lynch D. W., 1879, 1881

Maekawa S., 1779
Magishi K., 1931
Majid C. A., 255
Mak C. L., 563
Makino T., 491
Malik T., 445
Mallozzi R., 1815
Malovichko G., 1285
Malta O. L., 1053
Maly J., 1733
Mamiya K., 1875
Manuel A. A., 1951, 1955
Mao Y., 759
Maple M. B., 1963
March N. H., 65
Marezio M., 1471
Markert J. T., 1803, 1841, 1921
Markiewicz R. S., 1637
Martin U., 975
Martinez G., 635, 655
Marucco J. F., 1937
Mason N. J., 453, 463
Mason T. E., 1911
Massidda S., 1951
Matho K., 1735, 1849
Matic A., 1835
Matsuda K., 631
Matsuishi K., 491
Matsumoto S., 1931
Matsuo T., 183
Matsuura A., 1871
Matsuyama H., 107
Matysina Z. A., 9
Maude D. K., 403, 445, 459
Maximenko Y. L., 919
Mazin I. I., 1777
McCarron E. M., 1459
McGuire N. K., 1363
McMahon C. H., 663
McMahon M. I., 485, 539, 545
McMahon T., 669
McMillan P. F., 159
Medvedeva N. I., 1231
Meijerink A., 267, 673, 959
Mendoza-Alvarez J. G., 117
Meney A. T., 349, 423
Meney A., 469
Menoni C. S., 663, 669
Merchant P., 1815
Merkt U., 1829
Mevellec J. Y., 1239
Mezouar M., 525
Michels J. G., 381
Michenaud J. P., 99
Miller Jr. J. H., 1805
Millis A. J., 1611, 1641
Milne S. J., 15
Minomura S., 393, 631
Minquan Wang, 859
Mitchel W. C., 625
Mitrovic B., 1727
Miyamoto S., 1839
Miyamoto Y., 535, 577
Mizokawa T., 1875
Mizusaki J., 777, 943
Mo Y., 975
Mochiku T., 1863
Mochizuki S., 341
Moens P., 813
Moler K. A., 1899
Monien H., 1641
Monthoux P., 1651
Mook H. A., 1911
Moravetski V. I., 1085
Moreo A., 1645, 1709
Morris R. E., 1297
Mosser V., 599
Movshovich R., 1963
Moya E., 335, 481, 507, 571
Möller J., 1013
Mungan C. E., 735
Muntoni C., 877
Murakami H., 1801, 1807

Nachev I. S., 1039
Nagaosa N., 1737
Nagata K., 581
Nakahara J., 345, 407
Nakai T., 341
Nakata R., 703
Naraya K., 943
Nasrallah T. B., 1239
Nasu K., 1193
Nava R., 1077
Nazarenko A., 1645, 1709
Nazeer Ahammed Y., 825
Nelmes R. J., 485, 539, 545
Nemeth D. T., 1815
Nemetschek R., 1841
Nesheva D., 241
Neumeier J. J., 1841
Newhouse M. L., 715
Ng T.-K., 1737
Ni Fang, 1069
Nicholas R. J., 381, 453
Nicol E. J., 1725
Nieminen R. M., 1693
Niilisk A., 603
Niizeki K., 551
Nishikawa A., 551
Nishikawa K., 577
Norman A. G., 445
Norman M. R., 1863
Normand B., 1739
Nortier P., 799
Nosaka H., 559
Novak I., 277
Nowotny J., 1063

O'Reilly E. P., 349, 423
Oentrich R., 1077
Oh S.-J., 89
Ohashi S., 1877
Ohno K., 551
Ohta Y., 1741
Okuda T., 1317
Okuda T., 1317
Olson C. G., 1879, 1881
Onari S., 491
Ong C. K., 153
Ong N. P., 1895
Onoda-Yamamuro N., 183
Onufrieva F., 1743
Opel M., 1841
Orenstein J., 1815
Ormerod R. M., 1377
Osipov A. V., 211, 831
Osterwalder J., 1845
Otroshok V., 1
Ott H. R., 1783
Ouazzani T., 915
Ovchinnikov Yu. N., 1623
Owen J. J., 1297
Ozawa H., 1883

Paget K. M., 1837
Pao C.-H., 1745
Paolasini L., 1323
Paranjape B. V., 65
Pardo L., 15
Parent C., 1147
Park B.-N., 89
Park C. H., 585
Park H.-L., 89
Parkinson B. A., 1459
Parks B., 1815
Parrinello M., 501
Pate M. A., 403
Patel D., 663, 669
Paul W., 375
Paulsen F., 1573
Payne D. A., 233
Peck Jr. W. F., 1875
Pedregosa J. C., 1081
Pellé F., 1003
Pencarinha M. T., 301
Peng J. L., 1253
Peng Z. L., 389
Perfil'ev Y. D., 1089
Perlin P., 353, 411, 415, 419
Perrin D., 99
Perrin M.-A., 799
Peter M., 1951
Peterson J. R., 1095
Petrova S. A., 767
Pérez F. V., 335
Pierrat P., 201
Pietraszko A., 883
Pietrzak J., 819
Piltz R. O., 495
Pines D., 1651, 1781
Pinna G., 877
Piotrzkowski R., 599
Pisani C., 915
Planel R., 615
Ploog K., 385, 397
Pogorelova O. S., 9
Poirier D. M., 1881
Polian A., 481, 507, 525, 555
Poojary D. M., 1383
Poole C. P. Jr, 301
Popovici M., 1425
Porcher P., 1003
Porowski S., 353, 639

Portal J. C., 403, 445, 459
Pöttgen R., 807
Preuss R., 1659
Prieto C., 995
Prins A. D., 349, 423
Proutiere A., 1239
Puska M. J., 1693
Putikka W. O., 1747
Putz R., 1659

Qian Y., 981

Rabiller C., 1239
Radaelli P. G., 1471
Radecka M., 1031
Radzhabov E., 1
Ram-Mohan L. R., 323
Randeria M., 1863
Ravich Yu. I., 1155
Rebizant J., 1323
Reddy R. R., 825
Reeber R. R., 895
Reeves M. E., 1623
Regnault L. P., 1937
Reinhart F. K., 975
Rekas M., 1031
Ren Y., 1749
Reyes A. P., 1939
Reznik D., 1927
Rice T. M., 1663
Ricote J., 15
Rieck C. T., 1945
Rikken G. L. J. A., 655
Ritter T. M., 607
Robert J. L., 469, 599, 615
Roberts J. S., 429
Roberts M. A., 1353
Rodriguez C. O., 1751
Rodriguez-Carvajal J., 1331
Rodríguez F., 995
Roentgen P., 311
Rossner W., 907
Roudaut E., 891
Röhrig C., 1369
Ruoff A. L., 517, 521
Rupp M., 1787
Ryoo R., 293
Ryzhkov M. V., 1231

Sadowski M. L., 619
Sadowski W., 1951
Saito K., 107, 849
Saitoh H., 107
Sakai J., 393
Samara G. A., 625
San Miguel A., 555
Sandvik A., 1645
Sang-Hyun Yun, 787
Sankar G., 1395
Santoro A., 1471
Sarker S. K., 1753
Sarrao J. L., 1891
Sasamoto T., 943
Sato N., 1323
Sawada H., 1719, 1755
Sayle D. C., 799
Sánchez-Sinencio F., 117
Scalapino D. J., 1597, 1669
Scandolo S., 501
Scharnberg K., 1945
Scherrer H., 99, 195, 201, 1155
Scherrer S., 99, 195, 201, 1155
Schirber J., 1459
Schlapbach L., 1845
Schmelzer J., 1013
Schmidt M., 1881
Schneider R. P. Jr, 357
Schoenfeld O., 123
Schrieffer J. R., 1673
Schult D. W., 669
Schur D. V., 9
Schuster C., 1841
Schüttler H.-B., 1745
Schützmann J., 1839
Schwaller P., 1845
Secco E. A., 251, 1045
Secco R. A., 1045
Sekiyama A., 1875
Sellitto P., 615
Semitelou I. P., 891
Sengupta A., 35
Shahi K., 215
Shaltout I., 141
Shan W., 363
Sharma A., 251
Sheludchenko L. M., 1085
Shen S. C., 363
Shen Z.-X., xv, 1865, 1871
Shenderovskii V. A., 319
Sheng D. N., 1775
Shilo S., 415
Shimizu M., 1759
Shimomura O., 751, 1439
Shindo K., 551
Shirai M., 1801
Shirane G., 1913
Shirase N., 631
Shukla A., 1951
Shumeiko V. S., 1773
Shusheng Jiang, 1101, 1113

Sicart J., 615
Sidis Y., 1937
Siegert H., 1291
Sievers A. J., 735
Skierbiszewski C., 469
Skowronski M., 625
Sleight A. W., 1305
Slezov V. V., 1013
Slichter C. P., 1921
Slifkin L., 151
Slobodyanyuk A. V., 603
Sly J. L., 349, 423
Slyozov V. V., 1259
Smith G. W., 429
Smith J. M., 475
Soininen P. I., 1619, 1695
Sokol A., 1679
Solovjanov S. G., 1713
Song Y.-Q., 1939
Sooryakumar R., 563
Sorai M., 223
Sorescu M., 79
Sosin T. P., 411, 419, 649
Sosin T., 415
Soullard J., 129
Sridhar S., 1945
Stafsudd O. M., 1165
Stair K., 607
Stephens P. W., 1445
Stradling R. A., 445
Stradlober B., 1841
Studenmund W. R., 1831, 1843
Suarez-Barnes I. M., 1905
Suga H., 183
Sugano T., 123
Sun J. Z., 1787
Suortti P., 1415
Suski T., 353, 415
Suzuki H., 703
Suzuki T., 531
Svistunov V. M., 1801
Syassen K., 367, 385, 397, 567
Symons D. M., 453
Syono Y., 751

Tagawa H., 777, 943
Tajima S., 1839
Takagi H., 1875
Takahashi T., 1863, 1885
Takai S., 179
Takamura K., 407
Takarabe K., 393, 631
Takashima H., 1721
Takayama N., 341
Takeda K., 1223
Takemura K., 1439
Takontchoup R., 1277
Tan K. L., 277
Tanaka H., 777
Tanaka J., 1759
Tanaka K., 703
Tanaka S., 1839
Tanaka Y., 1721, 1761, 1767
Tang X. P., 1939
Tang Y., 141
Tatsumi T., 393
Teisseyre H., 353
Temkin H., 663
Tendeloo G. van, 1471
Terada N., 1883
Terakura K., 1719, 1755
Tholence J. L., 1471
Thomas J. M., 1395
Thomas R. J., 357
Thuéry P., 1209
Tikofsky A. M., 1763
Timusk T., 1821
Ting C. S., 1749, 1775
Tinoco T., 481, 507
Tober R., 419
Tobin J. G., 1879
Tokiwa K., 1883
Tokura Y., 1885
Torardi C. C., 1339
Toraya H., 1317
Tosatti E., 501
Tou H., 1931
Tremblay A.-M. S., 1769
Trepakov V. A., 919
Tribe W. R., 429
Tritt-Goc J., 935
Troyer M., 1663
Trzeciakowski W., 411, 415, 419, 649
Tsuchiura H., 1767
Tsuei C. C., 1787
Tsuji K., 559
Tsunetsugu H., 1663
Tyagur Y., 415

Uchida K., 345
Uchida S., 1811, 1875
Ushijima Y., 1767

Valdivia J. A., 1141
Valles Jr. J. M., 1809
Valster A., 349, 423
Van Der Burgt M., 453
Van Der Marel D., 1825
Varlamov S. V., 1713
Varma C. M., 1685

Venkateswaran U., 563
Verdaguer M., 995
Veron A., 51
Ves S., 1125
Vettier C., 1937
Vilk Y. M., 1769
Villeneuve R., 1937
Vogt T., 1305, 1339
Von Der Linden W., 1659
Voronin B. M., 839

Wachter P., 975
Waddill G. D., 1879
Wagner J. B. Jr, 1101, 1113
Wakimoto S., 1913
Walker E., 1951
Walker P. J., 453, 463
Wang H., 27
Wang K., 895
Wang Q., 285
Wang Z. P., 389, 397
Warburton R. J., 381, 453
Watanabe J., 407
Watanabe Y., 631
Weht R., 1751
Weill G., 525
Weinstein B. A., 607
Weissmann M., 1751
Wells B. O., 1865, 1871, 1913
Wen-Chen Z., 61
Wendin G., 1773
Weng Z. Y., 1775
Wertheim G. K., 745
Weyl C., 1209
Wha-Tek Kim, 787
Wie C. R., 607
Williams M. L., 459
Wilmsen C., 663
Winnacker A., 907
Witte A. M., 807
Woafo P., 1277
Woike Th., 1291
Wojtowicz T., 415
Wolf S. A., 1623
Wolf T., 1945
Wollman D. A., 1797
Woodward P. M., 1305
Wright N. G., 539, 545
Wróblewski M., 639
Wu X. D., 1831
Wu X., 1837

Xianping Fan, 859
Xiong Q., 1887, 1909
Xu J. H., 1749, 1805
Xue Y. Y., 1887, 1909

Yagi T., 1433
Yakinthos J. K., 891
Yakovenko V. M., 1777
Yamada K., 1913
Yamamoto Y., 559
Yamamura Y., 107, 849
Yamamuro O., 183
Yamanaka H., 1931
Yamanaka T., 1433
Yamashita K., 1223
Yamazoe K., 1931
Yelon W. B., 1425
Ying Q. Y., 1805
Yip K. W., 153
Yokoya T., 1863, 1885
Yonemura Y., 777, 943
Yoshida T., 777
Yoshioka A., 581
Yu J.-T., 233
Yu K.-S., 89
Yu P. Y., 595
Yu-Jahnes L.-S., 1787
Yuan S. X., 389
Yuen W. T., 445
Yunoki S., 1779

Zaginaichenko S. Yu., 9
Zakrzewski A., 415
Zaleski J., 883
Zanchetta J. V., 989
Zelaya-Angel O., 117
Zeman J., 635, 655
Zha Y., 1781
Zhang D., 27
Zhang J. Q., 389
Zhang K., 1941
Zhang X., 153
Zhang Y. H., 397
Zhang, Y., 981
Zhao J., 1209
Zhao X., 123
Zheng G.-Q., 1931
Zheng J., 27
Zheng Qi, 1069
Zhu Q., 1445
Zigone M., 635, 655
Zou Z. G., 1805

# KEYWORD INDEX

## A. TYPES OF MATERIAL


alloys, 93, 99, 117, 255, 323, 357, 1155, 1557
amorphous materials, 79, 123, 255, 559, 877, 1095, 1201, 1535
ceramics, 673, 799, 901, 919, 951, 1905
chalcogenides, 69, 89, 195, 201, 341, 531, 581, 735, 1253, 1491
electronic materials, 173
elements, 1439
fullerenes, 535, 577, 745, 1445
glasses, 39, 141, 849, 859, 877
inorganic compounds, 61, 151, 179, 223, 241, 267, 285, 341, 807, 839, 895, 995, 1003, 1095, 1291, 1433
interfaces, 189, 215, 1039, 1101, 1113
intermetallic compounds, 1549
magnetic materials, 531, 1253, 1479, 1491, 1499, 1509, 1517, 1521, 1529, 1535, 1563
metals, 1069, 1085
microporous materials, 1193, 1353, 1377, 1395
multilayers, 1499, 1557
nanostructures, 385, 1211, 1549
non-crystalline materials, 255
optical materials, 1, 233, 261, 267, 673, 959, 1479, 1509, 1521
organic compounds, 107, 183, 849, 1223, 1239
organometallic compounds, 69, 819
oxides, 129, 135, 141, 159, 261, 687, 715, 725, 767, 799, 877, 907, 919, 943, 965, 981, 989, 1031, 1063, 1077, 1089, 1125, 1147, 1297, 1305, 1339, 1363, 1389, 1459, 1471, 1479, 1693
polymers, 1131
quantum wells, 323, 363, 375, 389, 393, 397, 403, 411, 415, 419, 429, 453, 469, 475, 649, 1069, 1525
quasicrystals, 1407
selenium, 551
semiconductors, 89, 117, 165, 189, 201, 311, 319, 323, 329, 335, 345, 349, 353, 367, 381, 385, 407, 411, 415, 419, 423, 429, 435, 445, 459, 463, 481, 485, 491, 495, 501, 507, 517, 521, 525, 539, 545, 555, 559, 563, 567, 571, 585, 589, 595, 599, 603, 607, 615, 619, 625, 631, 635, 639, 649, 655, 663, 669, 787, 791, 825, 1141, 1165, 1253, 1525, 1543
surfaces, 93, 153, 915, 975
superconductors, 153, 925, 1231, 1407, 1459, 1471, 1697, 1727, 1777, 1891, 1905
thin films, 15, 123, 211, 831, 975, 1031, 1201, 1223, 1239, 1317, 1499, 1535, 1563


## B. PREPARATION AND PROCESSING


chemical synthesis, 39, 69, 767, 831, 1089, 1471
crystal growth, 1, 89, 99, 195, 703, 735, 787, 1063
epitaxial growth, 311, 607, 759, 1563
laser annealing, 79
plasma deposition, 117, 293
sol-gel growth, 15, 859, 1433
vapour deposition, 211, 831, 1223


## C. TECHNIQUES


*ab initio* calculations, 329, 495, 501, 551, 585, 901, 1039, 1147, 1231, 1345, 1509, 1529, 1693, 1855
differential scanning calorimetry (DSC), 99, 141, 251, 883
electron diffraction, 1211
electron microscopy, 15, 1211, 1239

high pressure, 27, 153, 159, 323, 335, 345, 367, 381, 389, 397, 407, 415, 423, 435, 453, 463, 475, 485, 491, 525, 535, 555, 563, 571, 595, 603, 615, 625, 635, 649, 663, 1095, 311, 341, 349, 353, 357, 363, 375, 385, 403, 411, 419, 429, 445, 459, 469, 481, 507, 531, 539, 545, 559, 567, 577, 585, 589, 599, 607, 631, 655, 669, 751, 965, 1045, 1125
infrared spectroscopy, 69, 135, 159, 277, 735, 1081, 1239

Mössbauer spectroscopy, 79, 877, 1085, 1089
neutron scattering, 891, 1211, 1305, 1331, 1339, 1425, 1471, 1697, 1777
nuclear magnetic resonance, 935
photoelectron spectroscopy, 277, 745, 1131, 1239, 1855
positron anihilation spectroscopy, 1693
Raman spectroscopy, 27, 39, 141, 159, 367, 393, 397, 491, 521, 531, 563, 567, 571, 577, 581, 635, 655, 951, 975, 1023, 1081, 1125
thermogravimetric analysis (TGA), 15, 725, 777
ultrasonic measurements, 1291
XAFS (XAFS and XANES), 481, 555, 995, 1395, 1517
X-ray diffraction, 183, 215, 255, 393, 481, 485, 507, 517, 521, 525, 535, 539, 545, 555, 559, 751, 767, 925, 965, 1063, 1297, 1353, 1363, 1377, 1383, 1389, 1395, 1433, 1439, 1445, 1459

## D. PROPERTIES AND PHENOMENA

acoustal properties, 39
anharmonicity, 895, 1077
color centers, 863
critical phenomena, 51
crystal fields, 223, 285, 341, 703, 959, 995, 1003, 1095
crystal structure, 35, 153, 159, 255, 261, 517, 555, 751, 777, 799, 883, 891, 901, 925, 981, 1147, 1297, 1305, 1317, 1339, 1353, 1359, 1363, 1377, 1383, 1389, 1433, 1439, 1445, 1471, 1563, 1891
defects, 1, 39, 51, 61, 129, 151, 215, 233, 241, 585, 589, 595, 603, 625, 631, 635, 687, 703, 725, 735, 799, 813, 819, 839, 907, 919, 1031, 1101, 1113, 1271, 1285, 1323
diffusion, 69, 151, 1013, 1031, 1039, 1165
elastic properties, 1013, 1291
electrical conductivity, 123, 165, 201, 215, 251, 319, 615, 777, 839, 943, 1045, 1101, 1113, 1155
electrical properties, 189, 195, 241, 319, 445, 459, 463, 599, 669, 943, 1031, 1165
electrochemical properties, 1433
electronic structure, 93, 135, 311, 319, 345, 349, 429, 469, 551, 745, 799, 813, 915, 943, 1069, 1085, 1131, 1141, 1147, 1155, 1231, 1291, 1491, 1517, 1521, 1525, 1549, 1693
electron paramagnetic resonance (EPR), 51, 61, 233, 703, 813, 819, 919
equations-of-state, 517, 965
Fermi surface, 1777, 1855
ferroelectricity, 173, 277
lattice dynamics, 329, 901, 935
luminescence, 1, 261, 267, 285, 311, 323, 345, 349, 357, 367, 385, 389, 393, 403, 407, 411, 415, 419, 423, 567, 595, 603, 649, 655, 673, 759, 787, 859, 907, 959, 995, 1003, 1095, 1147
magnetic properties, 79, 93, 301, 381, 807, 825, 1085, 1193, 1253, 1331, 1479, 1491, 1509, 1521, 1529, 1543, 1549, 1563
magnetic structure, 891, 1905
mechanical properties, 703, 1479,
microstructure, 15, 123, 215
Mössbauer effect, 35, 819, 877
muon-spin resonance, 1905
nuclear magnetic resonance (NMR), 1369
optical properties, 1, 89, 241, 335, 341, 363, 375, 507, 649, 663, 687, 735, 787, 907, 995, 1003, 1193, 1201, 1239, 1479, 1491, 1499, 1509, 1521, 1529, 1535, 1543, 1549, 1727
phase equilibria, 195, 715, 767, 831
phase transitions, 51, 107, 179, 211, 223, 251, 277, 485, 501, 507, 517, 521, 525, 531, 535, 539, 545, 551, 555, 559, 581, 607, 745, 751, 839, 883, 919, 935, 951, 965, 1013, 1023, 1045, 1125, 1305, 1439, 1445, 1459
phonons, 141, 165, 267, 397, 563, 607, 673, 791, 951, 1727, 1891
semiconductivity, 1223
specific heat, 35, 107, 179, 223, 849
superconductivity, 153, 301, 981, 1211, 1231, 1445, 1459, 1693, 1697, 1777, 1905
superlattices, 403, 423, 615
surface properties, 975, 1223, 1855
thermal conductivity, 201
thermal expansion, 895, 1271
thermodynamic properties, 129, 223, 639, 715, 839, 1045
transport properties, 99, 117, 201, 381, 403, 435, 453, 475, 989, 1039, 1063, 1101, 1113, 1155, 1165

*SEND FOR A FREE SAMPLE COPY OF ...*

# SOLID STATE COMMUNICATIONS

## An International Journal

Editor-in-Chief: **Manuel Cardona**, *Max-Planck-Institut für Festkörperforschung, Heisenbergstrasse 1, 7000 Stuttgart 80, Germany*
Associate Editor: **Aron Pinczuk**, *AT&T Bell Laboratories, Murray Hill, NJ, USA*
Founding Editor: **Elias Burstein**, *USA*

**Audience:** Solid State Scientists.

**AIMS AND SCOPE**

*Solid State Communications* is an international medium for the publication of **short communications** on significant developments in condensed matter science, giving scientists immediate access to important, recently completed work. The journal publishes original experimental and theoretical research on the physical and chemical properties of solids and other condensed systems and also on their preparation. The submission of manuscripts reporting research on the basic physics of materials science and devices, as well as of state-of-the-art microstructures and nanostructures, is encouraged.
A coherent quantitative treatment emphasizing new physics is expected rather than a simple accumulation of experimental data. Consistent with these aims, the submitted manuscripts should be kept concise and short, usually not longer than four printed pages. The number of figures and tables should also be kept to a minimum. Instructions for the preparation of manuscripts appear in the first issue of each volume. *Solid State Communications* will also publish important initial results of ongoing research which should be referred to in more extensive papers being submitted elsewhere at a later date.
It is strongly recommended that authors submit their manuscripts either to a local (or nearby) Editor or to one who is an expert in their field of endeavour.

**A Selection of Papers**

**L.F. MATTHEISS, T. SIEGRIST, R.J. CAVA**, Superconductivity in the $LnNi_2B_2C$ intermetallics via boron $A_{1g}$ phonons.
**A. MOKRANI, H. DREYSSÉ**, Magnetism of Rh vicinal surfaces?
**N.I. ZHELUDEV, M.A. BRUMMEIL, R.T. HARLEY, A. MALINOWSKI, S.V. POPOV, D.E. ASHENFORD, B. LUNN**, Giant specular inverse Faraday effect in $Cd_{0.6}Mn_{0.4}Te$.
**R.R. DU, H.L. STORMER, D.C. TSUI, L.N. PFEIFFER, K.W. WEST**, Shubnikov-deHaas Oscillations around v = 1/2 Landau level filling factor.
**X.M. CHEN, J.J. QUINN**, On the interpretation of the photoluminescence spectrum of fractional quantum hall systems.
**S.P. LEWIS, M.L. COHEN**, Prediction of an orthorhombic phase of germanium.
**P.I. TAMBORENCA, S. DAS SARMA**, Collective excitations in asymmetric parabolic quantum wells.
**X.D. ZHANG, J.D. RILEY, R.C.G. LECKEY, L. LEY**, Mapping the conduction band structure of GaAs along the ΓΔX direction.
**D.J. LOCKWOOD, A. WANG, B. BRYSKIEWICZ**, Optical absorption evidence for quantum confinement effects in porous silicon.
**D. FRÖHLICH, CH. PAHLKE-LERCH**, Contribution of longitudinal excitons to second harmonic generation in CuCl.
**G.O SMITH, E.J. MAYER, J. KUHL, K. PLOOG** (Germany), Pump-probe investigations of biexcitons in GaAs quantum wells.
**H. ISHIHARA, K. CHO**, A new type of nonlinear optical responses in a thin film owing to "nonlocality-induced double resonance in energy and size" of internal field.
**N.F. JOHNSON, P.M. HUI, K.H. LUK**, Theory of photonic band structures: a vector-wave *k* - *p* approach.

**ABSTRACTED/INDEXED IN:** *Cam Sci Abstr, Chem Abstr Serv, Curr Cont SCISEARCH Data, Curr Cont Sci Cit Ind, Curr Cont/Phy Chem & Earth Sci, Eng Ind, INSPEC Data, MSCI, PASCAL-CNRS Data, Research Alert, SSSA/CISA/ECA/ISMEC.*

1995: Volumes 93-96 (48 issues)
Associated Personal price: **£160.00 (US$239.00)**
Subscription price: **£1305.00 (US$1945.00)**
ISSN 0038-1098 (00230)

Pergamon

Pergamon is an imprint of Elsevier Science.
If an Associated Personal Subscription rate is available - full details accompany every sample copy requested. Sterling price quoted applies worldwide except in The Americas. US dollar price quoted applies in The Americas only.
Prices include postage and insurance. Customers resident in the EU will be charged VAT (or the equivalent) at their own country's rate, unless a VAT (or equivalent) registration number is supplied. Elsevier Science VAT registration number in the UK: GB 490 6384 25 000.

Please send me a **FREE SAMPLE COPY** of **SOLID STATE COMMUNICATIONS** (00230)

Name _____ Position _____

Organisation _____ Department _____

Address _____

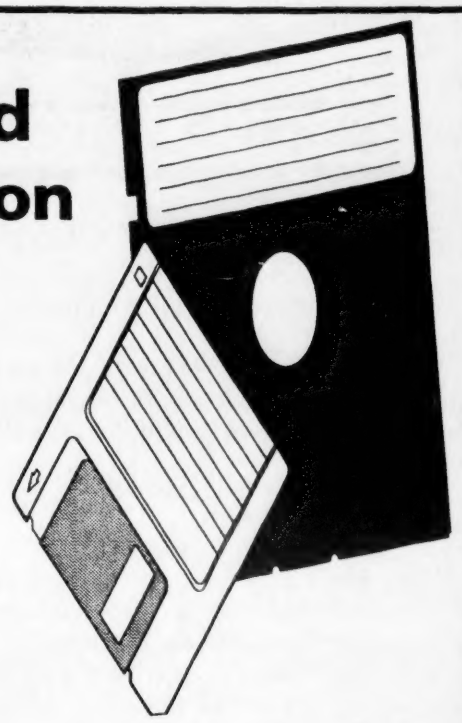
_____ Post/Zip Code _____

Return to: Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK
or Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA

IHA5

ELSEVIER SCIENCE LTD

# Elsevier Science Limited Encourages the Submission of Articles on Disk



## Delivery of Electronic Files

Authors may now submit manuscripts on 3.5" or 5.25" disks.

Disks must be clearly marked with the following information:

**Operating system**
**Disk format (e.g.DS/DD)**
**Word Processor used, including version number (users of $T_EX$ see later)**
**Authors' names**
**Short title of article**

Three printed copies of the final version of the manuscript should be submitted with the disk to the Journal Editor.
In the event of differences between disk and hard-copy, the hard-copy will be considered as the definitive version.

## Preparing Electronic Text Files

When using a word processor to prepare a manuscript the following should be noted:

Page design will be handled by the Publisher. There is therefore no need to use formatting commands such as centring, justifying text, indenting etc.
Use the word processor's facilities to indicate the following text attributes: bold; underline; italic; subscript; superscript; strikeout.
Do not use the hyphenation facilities of your word processor.
When preparing tables use tabs, not spaces, to align columns.
When using symbols to denote special characters please supply a list of all codes used.

Use "hard returns" (i.e. using the enter key) only at the end of paragraphs. Use your word processor's "word-wrap" feature within paragraphs.
It is essential that the printed versions supplied are produced directly from the submitted electronic version.

## $LaTeX$ /$TeX$

Authors wishing to submit their article as a $LaTeX$ /$TeX$ file should note the following:
Authors should use the "Article" style or the Elsevier $LaTeX$ package which is available via anonymous FTP from CTAN centres.

| **Host names:** | **CTAN directory:** |
|---|---|
| ftp.dante.de | /tex-archive/macros/latex/contrib/supported/elsevier |
| ftp.tex.ac.uk | /tex-archive/macros/latex/contrib/supported/elsevier |
| ftp.shsu.edu | /tex-archive/macros/latex/contrib/supported/elsevier |

(Further details on $TeX$ can be obtained from Martin Key)

**Authors should not add their own macros.**

## Preparing Electronic Graphic Files

Illustrations ideally should be produced in the Macintosh environment using the following software packages:
(Please do not save images as postscript files)

**Adobe Illustrator, Aldus Freehand, Cricket Graph, Macdraw, Chemdraw, Corel Draw-for PC**

However we will accept any of the popular drawing programs for the Macintosh and PC.
Artwork should be drawn for finished size using a Times or Helvetica typeface at a final size of 8pt type with appropriate lineweights.
Please indicate format, operating system, program and version number of the software used. If possible also print a directory of filenames.
Scanned artwork should be saved to Tiff format for both line and half-tone and scanned at a suggested setting of 400 dpi for half-tones and 1000 dpi for linework. If it is necessary to compress the scans please indicate the software used. It is essential that a hard copy print of the scans be included.
Illustrations should be logically named and saved as individual files to 3.5" disk or a SyQuest cartridge 44mB or 88mB. If 3.5" disks are not available to you, 5.25" disks are acceptable. Please send a laser print of the artwork with the electronic file.
When submitting electronic colour images please indicate the file format and program used (including compression software). Include a 4 colour machine or cromalin proof and check that all the separations (if provided) are colour identified.

**If you require any further information please contact the following:**


**Elsevier Science Ltd**
**The Boulevard**
**Langford Lane**
**Kidlington**
**Oxford**
**OX5 1GB**
**UK**

Martin Key (Text)
Tel: 44 1865 843550
Fax: 44 1865 843905
E-mail: m.key@elsevier.co.uk

Phil Halsey (Graphics)
Tel: 44 1865 843305
Fax: 44 1865 843921
E-mail:p.halsey@elsevier.co.uk

**Elsevier Science Inc**
**660 White Plains Road**
**Tarrytown**
**NY 10591-5153**
**USA**

Tom Lewis Flood
(Text/Graphics)
Tel: 914 333 2535
Fax: 914 333 2626
Email:t.lewisflood@elsevier.com

# Receive Regular News of Elsevier 's Publications

Elsevier Science mails information on new and existing publications regularly.
If you would like to be added to the mailing list please send us your name and full mailing address, indicating your fields of interest:

**ENGINEERING**
Energy Sources & Technology, Civil & Structural Engineering,
Mechanical Engineering, Electrical & Electronic Engineering,
Systems & Control Engineering, Aeronautical & Aerospace Technology,
Materials Technology, Chemical Engineering

**LIFE SCIENCES & MEDICINE**
Biological Sciences (including biochemistry & molecular biology), Agriculture,
Veterinary Medicine, Immunology, Cancer Research, Pharmacology, Neuroscience,
Vision Science, Clinical Medicine

**PHYSICAL SCIENCES**
Computer Science, Physics, Chemistry, Mathematics, Earth Science,
Environmental Science, Materials Science, Space & Planetary Sciences

**SOCIAL SCIENCE & HUMANITIES**
Sociology, Women's Studies, Psychology, Education,
Political Science, Geography, Economics, Management & Business, Linguistics,
Information Science, Librarianship

**Elsevier Science Ltd**
The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK

**Elsevier Science Inc.**
660 White Plains Road, Tarrytown, NY 10591-5153, USA

Did you know that if you are a contributor to any Elsevier Science Book or Journal you are entitled to

30%

Discount on all

our Books*?

Elsevier | Pergamon | North Holland | Excerpta Medica

*(except multi-volume reference works)

Contact your nearest Elsevier Science office in order to obtain a subject catalogue

Elsevier Science Ltd, The Boulevard, Langford Lane,
Kidlington, Oxford, OX5 1GB, UK
Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA

CO555/p7

AVAILABLE AT YOUR FINGERTIPS:

# THE ELSEVIER SCIENCE COMPLETE CATALOGUE ON INTERNET

NOW AVAILABLE:

# THE ELSEVIER SCIENCE COMPLETE CATALOGUE 1995 ON CD-ROM

**These catalogues feature all journals, books and major reference works from Elsevier Science. Furthermore they allow you to access information about the electronic and CD-ROM products now published by Elsevier Science. Demonstration examples of some of these products are included.**

**Features include:**

- All the journals, with complete information about journal editors and editorial boards
- Listings of special issues and volumes
- Listings of recently published papers for many journals
- Complete descriptions and contents lists of book titles
- Clippings of independent reviews of published books
- Book series, dictionaries, reference works
- Electronic and CD-ROM products
- Demonstration versions of electronic products
- Free text search facilities
- Ordering facilities
- Print options
- Hypertext features

ELSEVIER SCIENCE

Ci

*Catalogue on* **INTERNET**

ELSEVIER SCIENCE

Ccd

*Catalogue on* **CD-ROM**

## Extra features with the Catalogue on Internet

- Alerting facility for new & forthcoming publications
- Updated monthly

**ELSEVIER SCIENCE COMPLETE CATALOGUE INTERNET: TRY IT TODAY!**

gopher to: gopher.elsevier.nl
WWW: http://www.elsevier.nl/

**CD-ROM** (published yearly, free of charge)

**Please contact:**

Customer Service Department
Tel.: +31 (20) 485 3757
Fax: +31 (20) 485 3432
e-mail: nlinfo-f@elsevier.nl

ELSEVIER | PERGAMON | NORTH HOLLAND | EXCERPTA MEDICA

# • BACK ISSUES OF • THIS JOURNAL

Back issues of this and all other Elsevier Science journals are available in hard copy. New subscribers to a journal may purchase back issues of that publication in hard copy edition at 25% discount off the standard price. Elsevier Science maintains stocks of back issues and orders may be placed with confidence at your nearest Elsevier Science office. Should any issue of a volume be temporarily out of stock at the time of ordering, a high quality photoduplicated copy will be supplied at no extra charge to complete your order.

**SAVE UP TO 25% BY PURCHASING COMPLETE SETS**
Customers wishing to purchase complete sets can do so at a saving of 25% off the individual volume price.

**MICROFORM EDITIONS**
Back issues in microform of Elsevier Science research journals are also available. For further information please apply to your nearest Elsevier Science office.

**BACK ISSUES PRICE LIST**
Full details of the rates of back issues of all Elsevier Science journals can be found in our Back Issues Price List. Please contact your nearest Elsevier Science office for a copy.

Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, UK
Telephone: +44 01865 843699 • Fax: +44 01865 843911 • E-Mail: freesamples@elsevier.co.uk
Elsevier Science Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, USA
Telephone: +1 914 524 9200 • Fax: +1 914 333 2444

CO555/p2


Printed in Great Britain by BPC Wheatons Ltd, Exeter